

**EFFECT OF LEARNERS WITH THE CONDITION OF DOWN SYNDROME  
ON THEIR ACADEMIC PERFORMANCE AT ONE SCHOOL AND  
HOSPITAL UNIT IN KITWE**

**BY**

**KWAME NKRUMAH UNIVERSITY**

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## DECLARATION

I declare that the work presented in this dissertation entitled “effect of the condition learners with down syndrome on their academic performance at one school and hospital unit in Kitwe” is to the best of my knowledge my own work and that it is original. The dissertation contains no material that has been accepted for an award of degree or diploma by any other university college. However, all the works that are not mine have been acknowledged through citations and reference.

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## CERTIFICATE OF APPROVAL

This dissertation by Chidongo Phenny has been approved as a partial fulfillment of the requirements for the award of the Degree of Master of Special Education at Kwame Nkrumah University.

Examiners' Signatures

Signed..... Date.....

Signed..... Date.....

Signed..... Date.....



## **DEDICATION**

This work is done for you my late mother, Ms Kanyika Flyness for having encouraged me to concentrate on education as it is a key to human endeavour and whose unfailing care proved an excellent mentoring to becoming a responsible woman. On your behalf, I pass on this passion to your grandchildren Mwiza, Chimwemwe and Wanipa who together with my lovely and caring husband Mr Kaonga Gospel sacrificed their time to have me pursue the studies of Degree of Masters of Special Education at Kwame Nkrumah University.



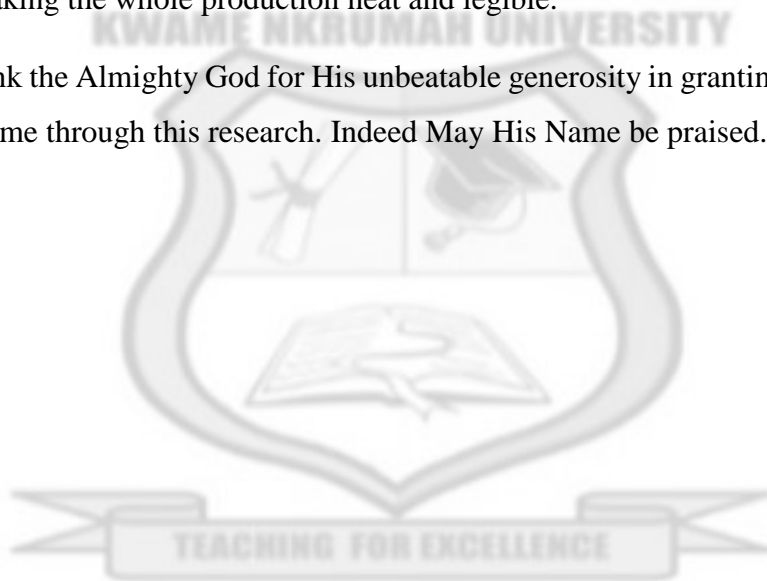
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## ABSTRACT

The study is focused on the effect of the condition of learners with down-syndrome on their academic performance. The objectives of the study were to; identify the conditions of learners with down-syndrome which affect their academic performance, assess the effect of the condition of learners with down-syndrome on their academic performance and examine the measures that could be taken in addressing the effect of the condition of learners with down-syndrome on their academic performance. The study was conducted at 2 learning institutions in Kitwe District. The study employed interpretivism qualitative paradigm and used a phenomenological research design. The sample size for the study was twenty-five (25). The instruments for data collection were the semi structured interview guide, focused group discussions, and observation checklist. Data analysis was thematic. The study revealed that heart problems, low vision and hearing difficulties, poor muscle tone and social interaction difficulties were conditions which had effect on their academic performance. Some learners with Heart problem had undergone surgery others and others had died of heart problem and those with low vision and hearing difficulties were not seeing clearly and hearing properly. Learners with poor muscle tone had poor posture and those with social interaction difficulties isolated themselves. The study also discovered the effect which was: Those with heart problems, lacked concentration and were absent from class and learners with low vision had reading difficulties while those with hearing difficulties failed to follow the oral instructions. Poor muscle tone had effect on learners' posture, which made their bodies fatigue quickly and fail to sit erect. Social interaction difficulties affected learners' ability to solve problem and language and new words. The study revealed measures to address the effect on the learners' academic performance. Learners with heart problem to be given less work and seek medical attention and those with low vision, teachers to use large prints, with hearing difficulties the teacher should give handouts when giving instruction and advise the parents to seek medical assistance to be provided with hearing devices and lenses. Poor muscle tone, parents should seek physiotherapy treatment, teachers to give less work and breaks to learners. Those learners with social interaction difficulties, teachers should engage learners in a lot of oral activities, problem solving and teach learners one word at time. It was evident that learners with down-syndrome had conditions which had effect on their academic performance. It was recommended that schools should provide necessary materials and financial support to learners with down-syndrome for them to improve their academic performance. Also, the research should be conducted in all schools with special units in the Copperbelt Province.

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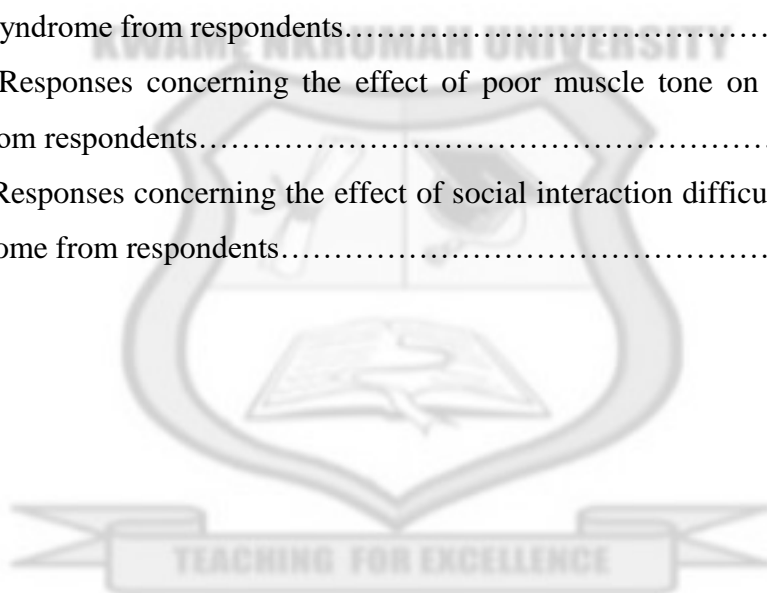
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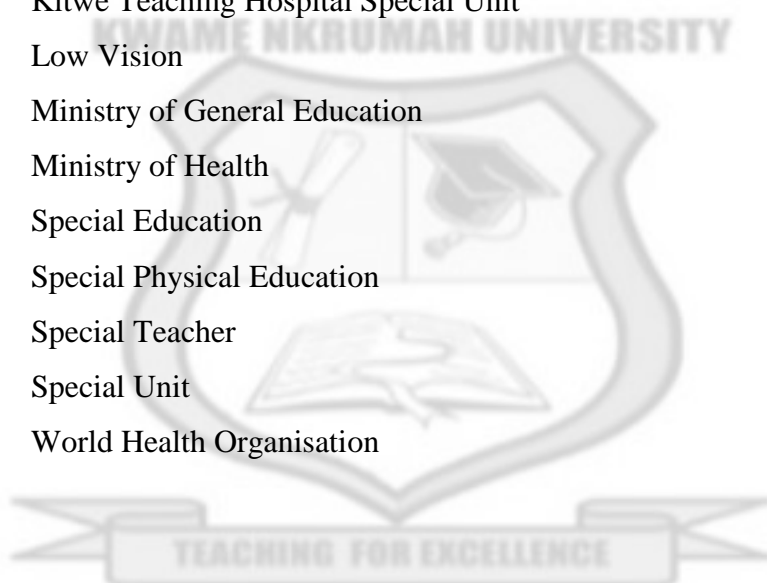
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## ACRONYMS AND ABBREVIATIONS

ADL:	Activities for Daily Living
CD:	Cardiac Disorders
CBP:	Copperbelt Province
DEB:	District Education Board
DS:	Down-Syndrome
DSI:	Down-Syndrome International
EA:	Expressive Arts
ESO-S:	Education Standard Officer Special Education
GT:	Guidance Teacher
ICF:	International Classification of Functioning, Disability and Health model
IEA:	Individualised Activity
KD:	Kitwe District
KTUSU:	Kitwe Teaching Hospital Special Unit
LV:	Low Vision
MoGE:	Ministry of General Education
MoH:	Ministry of Health
SE:	Special Education
SPE:	Special Physical Education
ST:	Special Teacher
SU:	Special Unit
WHO:	World Health Organisation



## KEY TERMS

Learners

Condition

Down-syndrome

Effect

Academic performance



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# CHAPTER ONE

## INTRODUCTION

### 1.1 Overview

This chapter covered the background of the study, statement of the problem, purpose of the study, research objectives, research questions of the study, significance of the study, delimitations and limitations of the study, theoretical framework and conceptual framework of the study and definitions of terms.

### 1.2 Background to the Study.

The condition of down- syndrome affected learners in terms of academic performance. Hyo et al. (2017) in their research in Goyang South Korea, stated that children with down-syndrome show impairment in cognitive domains such as concentration, communication, memory, and task performance compared to healthy peers and usually ranges from mild to moderate.

A lot of support concerning the learning of learners with down-syndrome had been given to them at international level. For instance, this is supported by the research conducted by Bird and Buckley (2008) in Portsmouth and South East Hampshire in United Kingdom. They asserted that learners with down-syndrome are supposed to be included in secondary schools. The findings of this study were that there was evidence that services and resources were provided to leaners with down-syndrome at international level and these were helping thousands of young people with down-syndrome to learn. However, the author did not bring out how the condition of leaners with down-syndrome affects learners academic performance.

In Africa, a lot of support had been given to learners with down- syndrome. For example, this was confirmed by the research conducted in Cape Town in South Africa by Dalton, McKenzie and Kahonde (2012) who stated that, the provision of education for learners with down-syndrome and other disabilities has been part of that process and the development of an inclusive education system can be traced back to the nation's founding document, *The Constitution of the Republic of South Africa Act No. 108 of 1996 in section 29*. The bill is stated that everyone has a right to 'a basic education, including basic adult education; and to further education, which the state through reasonable measures must make progressively available and accessible.' Nevertheless, the author did not bring out how the condition of Down-syndrome affects learners` academic performance.

In Zambia learners with down-syndrome were given support in many ways. For example, Ministry education (2015) had resumed the responsibility for educating students with disabilities. This was confirmed by report produced the Ministry of education, (2015) Education for all national review report: Zambia. The document outlined recommendations for special education and specified the needs for the integration and adaptation of education curriculum to meet identified and specified

individual needs of learners. From this report, learners with down-syndrome were supported through legislation although the report did not bring out how the condition of down-syndrome affects the learners in terms of their academic performance.

Despite the support from the international, Africa and Zambia in ensuring that learners with down-syndrome were educated, learners with down-syndrome were still affected academically. Hence this study aimed at investigating the effect of the condition of learners with down- syndrome on their academic performance.

### **1.3 Statement of the Problem**

Despite the support from the international, Africa and Zambia in ensuring that they were educated, the effect of the condition of learners with down- syndrome on their academic performance has not been investigated. Hence this study aimed at investigating the effect of learners with the condition of down- syndrome on their academic performance.

### **1.4 Purpose of the Study**

The purpose of this study was to explore on how the condition of down- syndrome had effect on the learners' academic performance.

### **1.5 Objectives of the Study**

The objectives of this study were to:

1. To identify the conditions of learners with down-syndrome that affect their academic performance.
2. To assess the effect of the conditions of learners with down-syndrome on their academic performance.
3. To examine the measures that can be taken in addressing the effect of the conditions of learners with down- syndrome on their academic performance.

### **1.6 Research Questions**

1. What are the conditions of down-syndrome that affect the learners' academic performance?
2. How does the condition of down-syndrome affect the learners' academic performance?
3. What measures can be taken in addressing the effect of the condition of learners with down-syndrome on their academic performance?

### **1.7 Significance of the Study**

The study was significant because it brought to light the condition of down- syndrome which could have effect on learner's academic performance. The findings of this study might also be

significant in that its findings might be added to the body of knowledge concerning the condition of down- syndrome that have effect on the learner's academic performance

### **1.8 Delimitations of the Study**

The study was carried out at a hospital special unit and a school special unit in Kitwe District on the Copperbelt Province and not any other place. This was because learners with down-syndrome were only found at these places.

### **1.9 Limitations of the Study**

The findings found in this study could not be generalised due to the limited number of sample size.

### **1.10 Theoretical Framework**

This study was guided by the International Classification of Functioning, Disability and Health Model (ICF) by world Health Organisation (2001). The model talks about health and health related domains, the functioning and the environment in which an individual is found. In this study the focus was on the learner with down-syndrome and the model was applied in the following conditions for this learner; heart problem, low vision and hearing difficulties, poor muscle tone and social interaction.

#### **1.10.1 Heart Problem**

According to World Health Organisation (2001) International Classification of Functioning, Disability and Health model participation in activities can be restricted by an individual's impairment to body structure and function and the limitation can often be seen in the environment. For example, running activities may require an individual cardiovascular and respiratory system which are often impaired in a learner with down- syndrome. In a school the child with down-syndrome with heart problems will encounter the following difficulties; lack of concentration when the teacher is teaching because of the pain and not understanding fully. Additionally, there is a lot of absenteeism due to hospitalisation which may effect on the child's academic performance. However, the teacher can advise parents to seek medical interventions such as surgical operations to improve the health of the child, hence absenteeism on the part of the child due to sickness is reduced. The child will in turn concentrate on what the teacher is teaching and the understanding of what is being taught will be increased. Implementation of remedial work by the teacher to make the pupil catch up on what was missed can also help the child with down-syndrome to improve academically.

### 1.10.2 Low Vision and Hearing Difficulties

In line with World Health Organisation (2001) international classification of functioning disability and health model children with down- syndrome have sensory impairment of hearing and visual which affect their cognitive performance, memory and academic learning. For instance, a learner with down-syndrome having a hearing loss may have cognitive processing difficulty that may affect perception of words. Hearing loss may also affect the auditory perception and they may have short-term memory of having limited capacity for storing and processing information they hear, such as words and their meanings, instructions and numbers. On the other hand, low vision can cause difficulties in academic learning for instance, in reading and writing activities as well as distinguishing colour and recognizing shapes due to poor sight which may limit the acquisition of academic knowledge, skills and concepts. The low vision and hearing loss which occurs in children with down-syndrome can mean significant problems for these children in any educational setting.

However, these conditions can be successfully addressed medically because children with down-syndrome usually experience hard of hearing, short sightedness and long sightedness which are mild. The teacher can advise parents to seek medical interventions from the ophthalmologist for low vision and audiologist for hearing difficulties to use amplification devices and lens. In addition, the teacher should avoid teaching in environments with competing background noise to help learners concentrate. The teacher can employ multisensory methods of teaching in order to help learners with down- syndrome improve their processing difficulties and the auditory short-term memory deficits that effect their ability to remember what they hear. The teacher can use symbolic movements, such as sign language, brail, gesture or finger spelling, and by visual methods, such as pictures, tactile pictures, symbols, words, and sentences will help the children to remember information. Teachers should not stand in front of the window or the source of light when teaching or speaking to the learner. Rest periods may be needed when doing close work and variation of near and distant tasks can prevent tiring. The teacher should move learners closer to see the chalk board and classroom demonstrations clearly. The use of different learning materials such as sensory modalities which implies the use of different senses while teaching for instance, the use of sight, touch, hearing, smell and taste for example when using materials such as food stuffs, visual aids, animal sounds and tactile objects such as utensils can enable pupils with down-syndrome to generally respond well and enhance their academic performance.

On the other hand, the types of vision issues for learners with down- syndrome may vary and must be addressed on an individual basis with support from a teacher of the visually impaired. Teachers should not stand in front of the window or the source of light when teaching or speaking to the

learner. Lights with rheostats and adjustable arms are helpful for close work. If contact lenses or glasses are prescribed, they should be worn. Time may be needed for adjustment to different lighting situations.

The use of different learning materials such as sensory modalities which implies the use of different senses while teaching for instance, the use of sight, touch, hearing, smell and taste for example when using materials such as food stuffs, visual aids, animal sounds and tactile objects such as utensils can enable pupils with down-syndrome to generally respond well and enhance their academic performance. Inability to use sensory modalities when using learning materials can reduce learners with down- syndrome who have low vision and hearing difficulties and the capability to grasp concepts and might also reduce their motivation to learn.

### **1.10.3 Poor Muscle Tone**

World health Organisation (2001) international classification of functioning health and disability model contends that children with down-syndrome have orthopedic condition in which performance of motor skills are often affected. Common difficulties often experienced by learners with down- syndrome having poor muscle tone among them are; fatigues quickly, poor posture and poor persistence to fine and gross motor tasks. In school a learner with the condition of down-syndrome having poor muscle tone has trouble in sitting erect and working at a table, may lean on one hand when drawing and writing and may tire very quickly. Additionally, he or she has difficulties with handwriting and drawing and tends to fidget and does not complete school tasks. These, difficulties often effect the academic performance of learners with down- syndrome.

Helping learners with poor muscle tone a teacher ought to advise parents to consult pediatric therapists for medical intervention such as motor therapy. By so doing, learners with poor muscle tone may receive direct occupational or physical therapy services as this could help to create and sustain a muscle contraction essential for motor skills, coordination skills, and balance skills to develop. This can really be a huge benefit for the learner's brain and body to work together and also for learning in the classroom which can improve their academic performance.

In the classroom, the learner with poor muscle tone having trouble maintaining an upright posture during learning, the teacher can provide a supportive chair or seat cushion to help maintain proper posture. For school activities that require a large amount of physical work such as written assignments, teachers may need to modify the requirements such, try breaking down large assignments into smaller parts, allow frequent breaks to allow the child to rest and provide extra time to complete assignments. This will enable the learner not to easily tire, hence he or she will

be able to grasp the concepts being taught and be able to complete the given tasks this will improve learner's performance.

#### 1.10.4 Social Interaction Difficulties

World health Organisation (2001) international classification of functioning health and disability model observes that social skills are affected in the learners with down- syndrome and this affects the acquisition of the developmental mile stones such as reading, writing, speaking and cognitive. In a school environment learners with down-syndrome exhibit social interaction difficulties which include abilities to think, problem solving, and communication. Learners with down-syndrome also show specific delays in learning to use spoken language relative to their non-verbal understanding. Language delay also leads to cognitive delay as much human learning is through language and language is internalized for thinking, remembering and self-organisation. Additionally, they have difficulties in learning new words, understanding what is said and using words correctly and in ways that others can understand what they are communicating to them. The gap between the learner's understanding and their ability to express themselves is a cause of much frustration and at times leads to behaviour problems and this can have an effect on their academic performance.

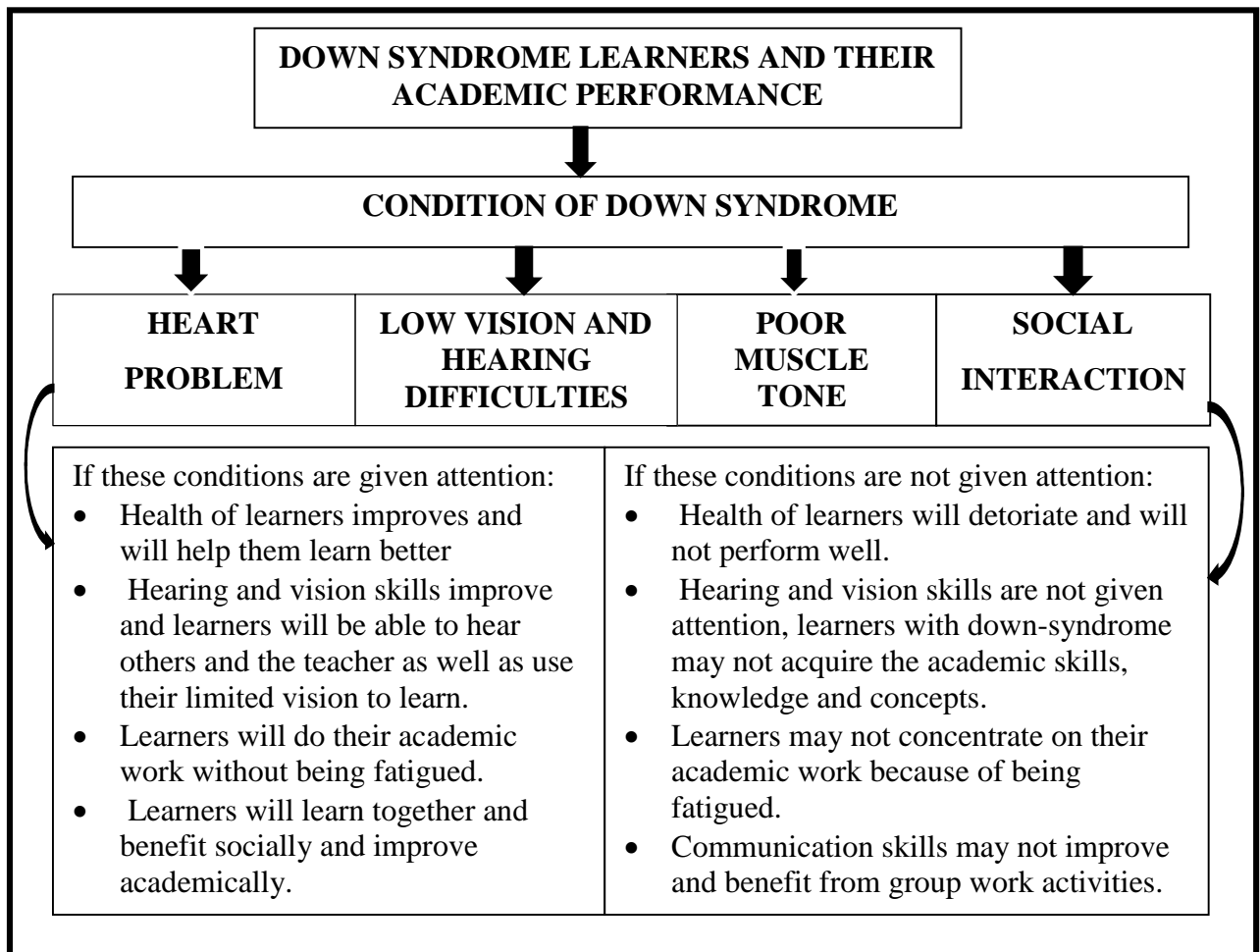
The teacher can help a learner with down-syndrome who has difficulties in social interaction in certain ways. One of them is by improving the learner's play skills, social skills and language or speech; creating play and learning situations which are more suited to the learner's abilities. The teacher should encourage classmates to play with the learner at school and at home. Hence, lack of effective interaction between the learner with down-syndrome and peers in the classroom can result in a limitation in a child not developing beneficial social relationships, beliefs and behaviors that promote effective learning and enhance academic performance through group work. There is also need for the teacher to create situations such as role play, conversation, reading aloud and question and answer in which the learner with down- syndrome can participate more as an equal or in which he or she can even excel. The teachers should strengthen the learner's language and speech abilities by: encouraging the child to use words he or she already knows and by systematically teaching the learner the words which fit to particular situations using signing and reading to support spoken language, thereby making use of the relative visual strength of children with down-syndrome.

The model of international classification of functioning health and disability suited well with the research carried out which was on learners with the condition of down-syndrome and its effect on their academic performance. For this reason, it helped the researcher in identifying the condition

of down-syndrome which had effect on learners' academic performance with a view to finding measures that could help improve their academic performance. This was because the international classification of functioning health and disability model focused on the heart problem, low vision and hearing difficulties, poor muscle tone and social interaction of the learner with down-syndrome which acted as a framework.

### 1.11 Conceptual Framework

**Figure 1.1 A diagrammatic representation conceptual framework of Down-syndrome Learners and their Academic Performance**



*Source: Researcher*

This conceptual framework was on learners with the condition of down-syndrome and their academic performance. The arrows show a reflective path that the researcher adopted throughout the research process. The framework started with exploring what down-syndrome is, then followed by its four conditions namely; heart problem, low vision and hearing difficulties, poor muscle tone and social interaction. Thereafter, the framework ended with the positive and negative outcomes of the four conditions of down-syndrome when they are or not given attention.

### **1.11.1 Down-syndrome Learners and their Academic Performance**

Down-syndrome according to Susan (2013) is a congenital disorder stemming from a chromosomal abnormality which occurs when one chromosome has an extra “part,” and an error occurs in cell division, or an extra chromosome exists, resulting in 47 chromosomes. If learners with down-syndrome are not given attention they can be affected in their academic performance. The focus in this study only took into account the four conditions namely; health condition, low vision and hearing difficulties, poor muscle tone and social interaction.

The heart problem had mainly focused on the abnormalities of the cardiovascular system which are common in down-syndrome. Low vision and hearing difficulties are the inability for the learner's visual and auditory discrimination of what is seen and heard. Poor muscle tone is the decreased muscle tone or the amount of resistance to movement in a muscle. Social interaction is a dynamic, changing sequence of social actions between individuals or groups who modify their actions and reactions due to the action by their interaction partner or partners.

### **1.11.2 Heart Problem**

As regards to giving medical attention to the health condition of learners with down-syndrome with heart problem, learners would concentrate when the teacher was teaching and understand fully. Absenteeism due to hospitalisation which made them miss classes would be reduced and this would improve their academic performance. Bird et al. (2010) posited that many of these children if they underwent cardiac surgery, could participate in classroom activities without any restrictions and this could improve their academic performance.

### **1.11.3 Low Vision and Hearing Difficulties**

When the condition of low vision and hearing difficulties in learners with down- syndrome was given attention, learners would find it easy to access, understand and process information at the same speed of other typical learners. This was because learners would have the ability to differentiate between objects based on a set of criteria, for example, words, sentences, colour, shape and size. They would also have the ability to identify and distinguish between different sounds such as conversations, questions, explanation and instructions (Falvey, 2015).

### **1.11.4 Poor Muscle Tone**

If the problem of poor muscle tone in learners with down- syndrome was given attention, learners would have no problems in participating in classroom activities. Susan (2013) observes that, this is because problems with mobility and posture, sitting upright, speech difficulties, ligament and joint laxity, and poor coordination of the brain and body in learners will improve. Hence school

tasks would be completed easily without being fatigued and this would improve their academic performance of learners with down-syndrome.

#### **1.11.5 Social Interaction Difficulties**

When the social interaction skills for learners with down-syndrome were given attention, the ability to communicate, understand, regulate and reciprocate emotions may improve and learners may benefit from group work activities. They might often understand more complicated social processes required for relating the basic skills to own task behaviour or activities and in turn this may improve their academic performance (Cale and Blakeley, 2008).

If these four conditions were given attention, learners with down-syndrome were likely to perform positively where as if no attention was given to these conditions, the academic performance of learners with down-syndrome was likely to be affected negatively.

#### **1.11.6 Positive Outcomes**

Improved heart problem for learners with down- syndrome who have heart problem would help them learn better. When hearing and vision skills were given attention for learners with down-syndrome, learners might acquire the academic skills, knowledge and concepts which would improve their academic performance. Additionally, improved muscle tone for learners with down-syndrome would enable learners do their academic work and complete tasks without being fatigued.

Lastly, when the communication skills for learners with down-syndrome were improved, learners might be able to socialise easily and benefit from group work activities. Positive academic performance was an indicator that learners with down-syndrome were able to acquire academic knowledge, information concepts and skills and were able to remember, understand or comprehend information, concepts, knowledge and skills being taught and had fewer problems that come from poor health, low vision and hearing difficulties, poor muscle tone, communication, hence were able to socialise and were able to think critically (Susan, 2013).

#### **1.11.7 Negative Outcomes**

If the health condition for learners with down-syndrome who have heart problem was not taken care of medically, the learners' health would deteriorate and they would not perform well academically. Learners would not be able to concentrate, comprehend the learning content and do all classroom activities. When hearing and vision skills were also not given attention for learners with down-syndrome, learners might not acquire the academic skills, knowledge and concepts which would improve their academic performance. At the same time when the poor muscle tone for learners with down-syndrome was not improved, learners would not be able to do their

academic work and complete tasks due to being fatigued. Lastly, when the communication skills for learners with down–syndrome were not improved, learners might not be able to socialise easily and benefit from group work activities (Falvey and Mary, 2015). If there were indications of not being able to acquire academic knowledge, information concepts and skills and not being able to remember, understand or comprehend information, concepts, knowledge and skills being taught it would be a sign that learners’ performance are negative due to the problem of poor health, low vision and hearing difficulties, poor muscle tone and communication resulting in failure to socialise.

### 1.12 Definition of Operational Terms

Ability:	The quality or state of being able.
Absenteeism:	The practice of regularly staying away from school.
Academic performance:	The extent to which a learner achieves his or her educational goals.
Audiologist:	A health care professional specialised in diagnosing and treating disorders of auditory.
Braille:	A tactile writing system used by learners who are visually impaired.
Cardiovascular:	The condition that involve narrowed of blocked blood vessels that can lead to heart attack.
Chromosome:	A living cell that is shaped like a thread which contains genes.
Classmates:	A fellow member of a class at school.
Communication:	The exchanging of information by speaking, writing or using some medium.
Curriculum:	The planned sequence of learner’s experiences in terms of the school’s instructional goals
Disability:	Any continuing condition that restricts every day activities.
Frustration:	A feeling of being annoyed or impatient because you cannot control or change a situation or achieve something.
Gene:	The basic physical unit of heredity.
Impairment:	Having trouble of doing something such as hearing or seeing.
Inclusive setting:	Is a general education system in which learners with and without disabilities learn together.
Inability:	Lack of ability
Interaction:	An occasion when two or more people communicate or react to each other.
Intervention:	The act of finding a permanent solution to an existing problem.

Learner:	A person who acquires new, or modifying existing, knowledge, behaviors, skills, values or preferences.
Legislation:	Laws which has been enacted by legislature to followed in special education.
Low vision:	A condition caused by eye disease.
Ministry of Education:	An institution overseeing primary, secondary and colleges of education in Zambia.
Mobility:	The ability to move from one position to another.
Muscle tone:	Continuous and passive partial contraction of the muscles.
Posture:	The position in which a learner holds his or her body when standing or sitting.
Ophthalmologist:	A specialist in diagnosing and treating of eye disorders.
Remedial work:	An activity aimed at helping learners with learning difficulties.
Sign language:	Language that use the visual-manual modality to convey meaning.
Socialise:	To mingle sociably with others
Social interaction:	The way learners talk and act with each other's.

### 1.13 Summary

Chapter one was an introduction to the study and it covered a brief background and highlighted that learners with down-syndrome have conditions which have effect on their academic performance. In response to these conditions, the study adopted the International Classification of Functioning Health and Disability Model by World Health Organisation which stressed on the measures and opportunities in the classroom as well as well as the aspects of the teacher in terms of teacher expertise and subject theory and practice in the classroom context. The chapter established the purpose of the study, the objectives of the study, the research questions, and the significance of the study, delimitation of the study, limitations of the study and how to address them. The chapter also adopted the conceptual framework of the down- syndrome learners and their academic performance.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Overview**

This chapter focused on the objectives of this study of identifying the condition of learners with down- syndrome which affected their academic performance, assessing the effect of the condition of learners with down- syndrome on their academic performance and examine the measures that could be taken in addressing the condition of learners with down- syndrome on their academic performance.

#### **2.2 Identification of the Conditions of Learners with Down-syndrome which affect their Academic Performance**

There are various conditions of down-syndrome which affect the learners' academic performance. In this study, the focus was on heart problem, low vision and hearing difficulties, poor muscle tone and social interaction. The literature brought out the conditions coming from down-syndrome which might have effect on the academic performance.

##### **2.2.1 Heart Problem**

Escudero (2008) carried out a research in Berlin in Germany on congenital heart disease in down-syndrome and Education. The aim of her study was to analyse the effect of congenital heart disease on school life and the way that they can be compensated for. According to Escudero, congenital heart disease covers several heart disorders of diverse nature and seriousness as such the response of each child to treatment differs. Her findings revealed that children with heart disease have to attend hospital frequently, either for checkups or for surgery, and as a result will have a higher number of days absent from school than the average pupil. However, the researcher did not consider other aspects affecting the learners with down-syndrome's academic performance such as lack of concentration due to pain which this current study will focus on including the aspects being researched on by this researcher.

Another study was conducted in Morocco Casablanca by Benhaourech, Drighil and El-Hammiri (2016) on the congenital heart disease and down-syndrome. The study by Benhaourech, Drighil and El-Hammiri found that congenital heart disease is frequently described in patients with Down-syndrome and is the main cause of death. However, the researcher did not consider other aspects that affect the academic performance of learners with down-syndrome such as lack of concentration due to pain and absenteeism due to hospitalisation because of their health problem

of heart condition of which this current study will focus on including the aspects being researched on by these researchers.

Furthermore, Marijon (2006) carried out a study on the prevalence of congenital heart disease in three countries of sub-Saharan Africa Zambia inclusive. A survey conducted by cardiologist provided an opportunity for assessing the prevalence of congenital heart disease in public schools. According to Marijon's findings confirmed that congenital heart disease is at least common in sub-Saharan Africa. However, Marijon's findings did not consider how congenital heart problem affects the learners in these public schools in the aspects of lack of concentration due to pain, and absenteeism due to hospitalisation because of the health problem of heart condition of learners with down-syndrome which this current study will focus on.

### **2.2.2 Low Vision and Hearing Difficulties**

Krisnsky-McHale et al (2014) conducted a study in Staten Island in New York on vision deficits in adults with down-syndrome. They found that in individuals with down-syndrome virtually all structures of the eye have some abnormality which likely diminishes vision. However, the findings by Krisnsky-McHale and others did not consider the other aspect of being limited in acquisition of academic knowledge, skills and concepts which may affect their academic performance of which this current study will focus on including the aspects being researched on by these researchers.

A study was done by Sacks and Wood (2003) in Philadelphia on hearing disorders in children with down-syndrome. Their study indicated that people with down-syndrome tend to have a significantly higher incidence of hearing problems than other groups. They added that the importance of hearing cannot be overemphasized and surveys suggest that as many as 80% of people with down-syndrome will have some problem with hearing. The researcher's findings were that hearing difficulties affected the learners with down-syndrome academic performance. Even so, Sacks and Wood did not bring out the aspects of having short term memory, having limited capacity for storing and processing information and having cognitive processing difficulty affecting perception of words they hear which may affect their academic performance of which this current study will focus on including the aspects being researched on by these researchers.

Down-syndrome International (2006) conducted a research in Zimbabwe on the plight of people with down-syndrome in Africa and education. The aim of the study was to have reports and international work about down-syndrome, especially encouraging submissions from developing countries. The findings were that learners with down-syndrome have auditory and visual impairments which affect their academic performance. Further, the study revealed that many

children with disabilities, especially those with down-syndrome do not have access to basic primary education. Nonetheless, the study did not bring out other aspects that affect the academic performance of learners with the condition of down-syndrome such as having limited capacity for storing and processing information they hear and may have cognitive processing difficulties which this study will consider including what is researched on.

In Zambia a research was conducted by Down-syndrome International (2018) on down-syndrome and education. The aim of the study was to investigate the learning profile of a person with down-syndrome. The findings were that special schools cater for children with a wide variety of needs and their experience of down-syndrome may vary, so it is still important for the school to have down-syndrome information. The study further revealed that learners with down-syndrome have auditory and visual impairments which affect their academic performance. Although, the study did not bring out other aspects that affect the academic performance of learners with the condition of down-syndrome such as having limited capacity for storing and processing information they hear and may have cognitive processing difficulties which this study will consider including what is researched on.

### **2.2.3 Low Muscle Tone**

Latash, Wood, and Ulrich (2008) carried a research in Pennsylvania on what is currently known about hypertonia, motor skill development, and physical activity in down-syndrome. According to them, one of the important issues in the study of motor development in people with down-syndrome is whether there is delay in achieving milestones or whether movements are abnormal or not properly suited for their purpose. Nevertheless, their study did not bring out the aspects of learners getting fatigues quickly, having poor posture, having poor persistence to fine and gross motor tasks, having difficulties in working at the table, having difficulties with handwriting and drawing and fidgeting and not completing school tasks which may affect their academic performance of which this current study will focus on including the aspects being researched on by this researcher.

Another study was conducted by Amel et al (2016) in Cairo on perceptual motor outcomes in Egyptian Down-syndrome children following the straining. According to their findings, children with down- syndrome have a wide variety of physical and functional disabilities. Their findings further added that children with down-syndrome have deficits in aspects of movement such as timing, balance and coordination as well as physiological aspects such as muscle tone and strength.

However, their study did not consider other aspects of learners with down-syndrome getting fatigues quickly, having poor persistence to fine and gross motor tasks, having difficulties in

working at the table and fidgeting and not completing school tasks which may affect their academic performance of which this current study will focus on including the aspects being researched on by this researcher.

Down-syndrome International (2018) carried out a study in Zambia on down-syndrome and education. The aim of the study was to investigate the learning profile of a person with down-syndrome. According to the study, the findings were that children with down-syndrome develop more slowly than their peers, arriving at each stage of development at a later age and staying there for longer. The study further contended that consequently, the gap between children with down-syndrome and their peers will widen with age. They added that the degree of delay varies across developmental areas such as motor and that delayed motor skills which affect both fine and gross motor skills as well as Speech and language impairment are factors that inhibit learning in children with down- syndrome. Even so, the study by Down-syndrome International did not bring out other aspects of learners getting fatigues quickly, having poor posture, having difficulties in working at the table, having difficulties with handwriting and drawing and fidgeting which may affect their academic performance of which this current study will embark on including what has been research on.

#### **2.2.4 Social Interaction**

A study was conducted by Lucisano et al (2013) in Ribeira Pretoin, Brazil on social interaction of preschool children with down-syndrome during extracurricular activities. Their study demonstrated that in the interpersonal category, the higher occurrence was the behaviour “occur interactions with other children”. In the self-expression skills category, only the behaviors “smile” and “imitates other children” have significant occurrence. The behaviors more frequently identified in this study permit to understand that the school environment is a facilitator for the interaction of children with down-syndrome with the typical developmental child, allowing him or her to develop the expected social skills. However, their study did not consider the aspects of social interaction difficulties that learners with down-syndrome exhibit such as difficulties to think, problem solving and communication difficulties, delays in learning to use spoken language leading to cognitive delay, difficulties in learning new words and understanding what is said, difficulties in using words correctly in ways that others can understand which can affect their academic performance of which this current study will focus on including the aspects being researched on.

Klopas (2007) conducted a study in South Africa in Gauteng on Individuals with Down-syndrome on ‘let us know that they are able to learn’. The findings of the study were that they can have fun,

be responsible, dependable, and can work hard. In his findings, he further explained that persons with down-syndrome have feelings like other human beings and they have ups and downs, and that they will be happy when things go well, and they will be sad when they are offended or looked upon as second-class citizens. Additionally, his study revealed that persons with down-syndrome demonstrate that they do not have to be segregated, institutionalized, and shunned away, but can be active participants in community life. Nevertheless, Klopas's study did not discuss the aspects of social interaction difficulties that learners with down-syndrome exhibit such as difficulties to think, problem solving and communication, delays in learning to use spoken language leading to cognitive delay, difficulties in learning new words and understanding what is said, difficulties in using words correctly in ways that others can understand which can affect their academic performance which this current study will focus on.

A study was conducted in Zambia on down-syndrome and education by Down-syndrome International (2018). The aim of the study was to investigate the learning profile of a person with down-syndrome. The findings of the study revealed that children with down-syndrome exhibit delays across developmental areas of social, cognition, communication and self-help and these inhibit learning. The study highlighted some of the key areas of delays across developmental areas of social, cognition and communication which can affect the academic performance of learners with condition of down-syndrome. Nevertheless, the study did not consider other aspects of social interaction difficulties that learners with down-syndrome exhibit such as, problem solving, delays in learning to use spoken language, difficulties in learning new words and understanding what is said, difficulties in using words correctly in ways that others can understand of which this current study will embark on including what is researched on.

### **2.3 Assess the Effect of the Conditions of Learners with Down-syndrome on their Academic Performance.**

This discussion was based on assessing the effect of the conditions of learners with down-syndrome on their academic performance. The concentration was on heart problem, low vision and hearing difficulties, poor muscle tone and social interaction. The literature brought out how those conditions coming from down-syndrome might had effect on the learners' academic performance.

#### **2.3.1 Heart Problem**

A study was conducted on academic outcomes in children with congenital heart defects in down-syndrome in Atlanta by Oster et al (2017). The aim of the study was to determine the association of congenital heart disease with academic outcomes and compare the outcomes to the severity of congenital heart disease. According to their findings children of all types of congenital heart

defects have poorer academic outcomes compared to their peers. However, the researchers did not clearly explain how the condition of congenital heart defects effects on the academic performance in learners with down-syndrome by bringing out aspects such as lack of concentration leading to not understanding fully what the teacher is teaching in class and absenteeism due to hospitalisation which makes the pupil miss class lessons regularly hence making the pupil to lag behind which this current study will focus on.

A study was conducted on congenital heart disease in sub-Sahara Africa Zambia inclusive by Jivanji et al (2019). According to their study congenital heart disease is an enormous problem in low middle income countries and in particularly sub-Saharan Africa. They further said congenital heart disease has a significant burden on families and simple conditions if left untreated can lead debilitating condition such as affecting the future earning potential of families which are already financially constrained and it forms part of morbidity and mortality in public health. Jivanji et al highlighted one of the key areas of the problems of congenital heart disease if left untreated it can seriously affect the learner's ability to carry on with regular activities in school which can lead to poor performance. However, they did not explain how the debilitating condition can have an effect on children's academic performance as this can cause them not to concentrate and understand fully what the teacher is teaching. Similarly, another aspect which was not considered by the researchers is absenteeism due to hospitalisation because of the heart condition problem of learners with down- syndrome which may affect their academic performance due to missing class lessons regularly of which this current study will focus on including the aspects being researched on.

### **2.3.2 Low Vision and Hearing Difficulties**

A study was conducted by Moss (2014) in Spain on hearing and vision loss associated with down-syndrome. According to Moss hearing loss in children with down-syndrome may cause them to have auditory short term memory which causes them to have difficulties in processing information they hear for example words and their meanings, instructions and numbers. Moss's study further stated that low vision in children with down-syndrome may make children have difficulties in viewing what is being presented to them in class and at the same time learners may tire easily when reading and doing close work because of straining their eyes which can have an effect on their academic performance. The study revealed that vision and hearing loss which occur in children with down-syndrome cause learners have challenges in their educational programing. Moss highlighted one important notion that hearing loss in children with down-syndrome has an effect on their educational development. In his findings he did not consider other aspects such as

having processing difficulties that may affect their perception of words and having cognitive processing difficulty that may affect perception of words.

On the other hand, the study by Moss sighted a fundamental idea that vision deficit in children with down-syndrome has an effect on their academic performance. Still, the study did not consider other important aspects of Low vision which may have an effect on the academic performance of learners with down-syndrome such as difficulties in writing activities which affects learners' speed and legibility of writing which are considered in the current study including what is being researched on.

In Zambia a research was conducted by Down-syndrome International (2018) on down-syndrome and education. The aim of the study was to investigate the learning profile of a person with down-syndrome. The findings were that special schools cater for children with a wide variety of needs and their experience of down-syndrome may vary, so it is still important for the school to have down-syndrome information. The study further revealed that learners with down-syndrome have auditory and visual impairments which inhibit learning because children with such disabilities cause them to have short term memory, working memory weakness and difficulties with consolidation and retention. Down-syndrome International highlighted the effects of hearing loss and vision loss on children with down-syndrome and this are important aspect which this study will embark on. Although, the study by down-syndrome International did not bring out other aspects that affect the academic performance of learners with the condition of down-syndrome such as having difficulties in processing information they hear making learners to fail to organise and store information to be retrieved at a later time and may have cognitive processing difficulties making learners fail to think and to remember which the current study will also take into consideration.

### **2.3.3 Poor Muscle Tone**

Aly and Abonour (2017) conducted a research in Cairo in Egypt on the Effect of core stability exercise on postural stability in children with down-syndrome. According to their research children with down-syndrome showed delays in the acquisition of both postural and voluntary components of motor control compared with that of the developmentally normal child. Their study further stated that children with down -syndrome with delayed motor control have generally a shorter concentration span which affects their learning as they are unable to complete daily classroom tasks. The findings of the study are in line with what the current study will be considering in terms of learners' inability to complete daily classroom tasks due to shorter concentration span. In spite of that, Aly and Abonour did not consider aspects such as poor

persistence to fine motor tasks causing learners to have difficulties with handwriting and drawing and having poor posture making learners with down-syndrome face difficulties in working at the table which may affect their academic performance of which this study will focus on.

Down-syndrome International (2018) carried out a study in Zambia on down-syndrome and education. The aim of the study was to investigate the learning profile of a person with down-syndrome. Down-syndrome International's findings were that children with down-syndrome develop more slowly than their peers, arriving at each stage of development at a later age and staying there for longer. The study further contended that consequently, the gap between children with down-syndrome and their peers will widen with age. The findings of the study revealed that there are a number of factors that have an effect on learning in children with down-syndrome and among these are delayed motor skills such as fine and gross motor which affects their writing skill and gross motor skills which affects sitting upright on the desk and eye hand coordination when reading and writing. Speech is also affected which makes it difficult for the learners with down-syndrome to communicate accurately. Down-syndrome International brought out one important concept that delayed motor skills that affect both fine and gross motor skills in children with down-syndrome has an effect on their learning. Even so, the study by Down-syndrome International did not bring out other aspects of learners getting fatigues quickly and fidgeting causing them not to complete classroom tasks and having poor posture making learners with down-syndrome face difficulties in working at the table which may affect their academic performance of which this current study will focus on including what has been research on.

#### **2.3.4 Social Interaction**

Gill (2019) carried out a research on the importance of early intervention in down-syndrome in Pretoria. The findings of his study revealed that cognitive development and social growth are related. He further said that children experiencing delays in their cognitive development are likely to have difficulty in becoming socially competent and self-regulation of their behaviour and this effects their educational development. Delayed spoken language skills also affects children with down-syndrome the ability to learn and play with other children. The aspects of delayed cognitive development, delayed spoken language and socially incompetence which affects children with down-syndrome educational development pointed out by Gill are vital aspects which are in line with this study of which the current study will focus on. But, Gill's study did not consider other aspects that have an effect on the academic performance on learners with down-syndrome such as communication difficulties which inhibits participation in class, difficulties in learning new words and understanding what is said and difficulties in using words correctly in ways that others

can understand causing learners to be frustrated and isolated which this research will consider including the aspects being researched on by Gill.

A study was conducted in Zambia on down-syndrome and education by Down-syndrome International (2018). The aim of the study was to investigate the learning profile of a person with down-syndrome. The study revealed that children with down-syndrome exhibit delays across developmental areas of social, cognition and language and these inhibit learning. This is because learners with down-syndrome fail to socialise with others as a result they lack the keen to communicate and have difficulties with generalisation, thinking and reasoning, and sequencing difficulties. Down-syndrome International indicated some major concepts which are delays in social, cognition and language which inhibit learning in children with down-syndrome. Even though, the study by the Down-syndrome International did not consider other aspects of social interaction difficulties that learners with down-syndrome exhibit which may have an effect on their academic performance such as difficulties in learning new words and understanding what is said and difficulties in using words correctly in ways that others can understand which makes learners to be frustrated and isolate themselves of which this current study will embark on including what has been researched on the Down-syndrome International.

#### **2.4 Examining Measures that could be taken in Addressing the Effect of the Condition of Learners with Down- syndrome on their Academic Performance**

The literature was based on the measures that could be taken in addressing the conditions of learners with down-syndrome on their academic performance. The attention was on heart problem, low vision and hearing difficulties, poor muscle tone and social interaction. The literature brought out measures that could be taken in addressing the effect of the conditions of learners with down- syndrome on their academic performance.

##### **2.4.1 Heart Problem**

Pascall et al (2015) conducted a study in Morocco on Cardiac disorders in people with Down's syndrome. Their study revealed that congenital heart disease in down-syndrome is reported to be as high as 40 to 63% and is a major cause of poor academic performance. The study further found that this heart problem in learners with down-syndrome can only be addressed by timely treatment of cardiac anomalies and secondly to apply appropriate preventative measures. When this is done academic performance of learners with down-syndrome improves due to the improvement of their health. The study conducted by Pascall and others revealed that the measure for the learners with down-syndrome having heart condition is health treatment which improves their academic performance.

Marijon (2006) carried out a study on the prevalence of congenital heart disease in school children of sub-Saharan Africa including Zambia. A survey conducted by a cardiologist provided an opportunity for assessing the prevalence of congenital heart disease in public schools. The study further revealed that congenital heart disease affects learning of children with down-syndrome in public schools. Marijon's study recommended early detection of these cardiac diseases in children as important in order to prevent serious complications. The study carried out by Marijon brought out the measure for the learners with down-syndrome having heart condition is health treatment which improves their academic performance. If this treatment is done then the academic performance of learners with down-syndrome will improve because of the improvement of their health.

#### **2.4.2 Low Vision and Hearing Difficulties**

A study was conducted by Moss (2014) in Spain on hearing and vision loss associated with down-syndrome. The study revealed that vision and hearing loss which occur in children with down-syndrome cause learners have challenges in their education. Moss's study further revealed that the condition of hearing and vision loss associated with down-syndrome can successfully be addressed medically. The condition of low vision can be addressed with the help of the ophthalmologists who can suggest the correct lenses. On the other hand, an audiologist for hearing loss can help to prescribe correct hearing aids. When this is done academic performance of learners with down-syndrome improves due to the improvement of their hearing and vision. The study conducted by Moss revealed that the measure for the learners with down-syndrome having hearing difficulties and vision loss is health treatment which improves their academic performance.

In Zambia a research was conducted by Down-syndrome International (2018) on down-syndrome and education. The aim of the study was to investigate the learning profile of a person with down-syndrome. The findings were that special schools cater for children with a wide variety of needs and their experience of down-syndrome may vary, so it is still important for the school to have down-syndrome information. The study further revealed that learners with down-syndrome have auditory and visual impairments which inhibit learning because children with such disabilities cause them to have short term memory, working memory weakness and difficulties with consolidation and retention. Down-syndrome International highlighted the effects of hearing loss and vision loss on children with down-syndrome and these are important aspects which this study will embark on.

In their measures, they recommended that children with down-syndrome having auditory and visual impairments will benefit when the teachers recognise their specific learning profiles which

will address their visual and auditory impairments such as use of sign, gestures, braille and visual support. The study further found that teachers should also teach using pictorial, concrete and practical materials. When this is done the academic performance of learners with down-syndrome improves because the learners are able to acquire knowledge and learn new skills as a result of using sign, gestures, braille and multi-sensory teaching methods by the teacher. The study conducted by Down-syndrome International revealed that the measures for the learners with down-syndrome having auditory and visual impairments is the recognition of the specific learning profiles for learners with down-syndrome by the teacher and use of appropriate strategies to enable them develop their knowledge, learn new skills and be included into school as effectively as possible and this will improve their academic performance.

#### **2.4.3 Poor Muscle Tone**

Aly and Abonour (2017) conducted a research in Cairo in Egypt on the Effect of core stability exercise on postural stability in children with down-syndrome. According to their research children with down-syndrome showed delays in the acquisition of both postural and voluntary components of motor control compared with that of the developmentally normal child. Their study further stated that children with down-syndrome with delayed motor control have generally a shorter concentration span which affects their learning as they are unable to complete daily classroom tasks. Aly and Abonour recommended that in order to improve postural and voluntary components of motor control in learners with down-syndrome; core stability exercises and conventional physical therapy programme should be considered as an important part of rehabilitation programme for the children with down-syndrome. When this is done the academic performance of learners with down-syndrome improves due to the improvement of their postural and voluntary components of motor control. The study conducted by Aly and Abonour revealed that the measure for the learners with down-syndrome having delays in the acquisition of both postural and voluntary components of motor control are core stability exercises and conventional physical therapy programme which improves their academic performance.

Down-syndrome International (2018) carried out a study on down-syndrome and education in Zambia. The aim of the study was to investigate the learning profile of a person with down-syndrome. According to the study, the findings were that children with down-syndrome develop more slowly than their peers, arriving at each stage of development at a later age and staying there for longer and consequently, the gap between children with down-syndrome and their peers widens with age. Further, Down-syndrome International contended that delayed motor skills that affect both fine and gross motor skills in children with down-syndrome has an effect on their learning. In their measures, they recommended that children with down-syndrome will generally

benefit from occupational, speech and language therapy to help with their specific language difficulties and motor difficulties. Where facilities allow, this can be provided by an occupational, a speech and language therapist. When this is done academic performance of learners with down-syndrome improves due to the improvement of their speech and language and motor skills. The study conducted by Down-syndrome International revealed that the measure for the learners with down- syndrome having poor muscle tone is occupational, speech and language therapy which improves their academic performance.

#### **2.4.4 Social Interaction**

Gill (2019) carried out a research on the importance of early intervention in down-syndrome in Pretoria. The findings by Gill revealed that cognitive development and social growth are related. The author said that children with down-syndrome experiencing delays in their cognitive development are likely to have difficulties in becoming socially competent and self-regulation of their behaviour and this effects their educational development. Gill further said that delayed spoken language skills also affect children with down-syndrome in terms of their ability to learn and play with other children. Gill recommended that in order to improve cognitive development and social growth in learners with down-syndrome, they should be taught special skills to help them cope with the disability. The skills should also help the child overcome some of the limitations imposed on learning and the normal everyday activities experienced by able-bodied children.

Gill further found that children with down-syndrome should be helped acquire adaptive skills leading to greater independence and competence so that he or she function within the main stream and achieve a sense of self-mastery and develop a positive self-image. When this is done the academic performance of learners with down-syndrome improves due to the improvement of their cognitive development and social growth. The study conducted by Gill revealed that the measures for the learners with down-syndrome having social interaction difficulties are to improve their cognitive development and social growth by teaching them special skills to help them cope with the disability and also by helping them acquire adaptive skills leading to greater independence and competence so that he or she function within the main stream and achieve a sense of self-mastery and develop a positive self-image.

A study was carried out in Zambia by Down-syndrome International (2018) on down-syndrome and education. The aim of the study was to investigate the learning profile of a person with down-syndrome. According to their findings children with down-syndrome exhibit delays across developmental areas of social, cognition, communication and self-help and these inhibit learning.

In their measures to address this, they recommended that teachers should recognise learning profiles in children with down-syndrome in order that the most appropriate strategies are used so that children with down-syndrome are able to develop their knowledge and learn new skills.

The study further recommended that the profile should incorporate the strength of tendency to model behavior and attitude from peers and adults, strength to deal with difficulties with generalization, thinking and reasoning and improve communication. Speech and language therapy were also recommended to help with specific language difficulties and that therapists could visit and train and advise school staff. They also recommended that Parents and school staff should work together to ensure that children with down-syndrome make the best possible progress and that any difficulties are ironed out at an early stage. When this is done the academic performance of learners with down-syndrome improves due to the improvement in their Speech and language, thinking, reasoning and communication.

The study conducted by Down-syndrome International revealed that the measure for the learners with down-syndrome having social interaction difficulties are recognizing learning profiles in children with down-syndrome and use appropriate strategies to help them develop their knowledge and learn new skills, and incorporate the strength of tendency to model behavior and attitude from peers and adults, strength to deal with difficulties with generalization, thinking and reasoning and improve communication. Down-syndrome International also recommended that speech and language therapy and that Parents and school staff should work together to ensure that children with down-syndrome make the best possible progress would improve their academic performance.

## **2.5 Summary**

From the revealed literature on the effect of learners with the condition of down-syndrome on their academic performance, most studies that have been conducted revealed that learners with down-syndrome have conditions which have effect on their academic performance. The literature discovered that these conditions effect on the down-syndrome learners' ability to read, write, learn and grasp concepts. However the literature from the previous studies did not point out all the effects the conditions have on the learners with down-syndrome as well as the measures to address the effects as it was done in the current study.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Overview**

This chapter took into account the following; research paradigm, research design, population, sample, sampling technique/procedure, data collection instruments/methods, data collection procedure, data analysis, ethical considerations and measures of trustworthiness.

#### **3.2 Research Paradigm**

The study employed interpretivism qualitative paradigm. According to Kuhn (2015) a research paradigm is a set of common beliefs and agreements shared between scientists about how problems should be understood and addressed. This research used qualitative research paradigm. Tewksbury (2009) contends that qualitative research seeks to provide in-depth, detailed information, which although not necessarily widely generalized, explores issues and their context, clarifying what, how, when, where and among whom behaviors and processes operate, while describing in explicit detail the contours and dynamics of people, places, actions and interactions without the involvement of numbers. Qualitative research seeks to understand a given research problem or topic from the perspectives of the local population it involves.

Additionally, qualitative research was especially effective in obtaining culturally specific information about the values, opinions, behaviors, and social contexts of particular populations. Interpretivism paradigm was applied in this research. Thomas (2003) explains that interpretivism paradigm is concerned with understanding the world as it is from subjective experiences of individuals and it uses meaning oriented methodologies such as interviewing or participant observation that rely on a subjective relationship between the researcher and subjects. This research paradigm qualified in this study because the researcher did not make use of numbers and collected in-depth data that was descriptive in nature and the interpretation of data depended on the responses from the sample.

#### **3.3 Research Design**

Akhtar (2016) define research design as a basic plan that guides the data collection and analysis phases of the research project. It provides the framework that specifies the type of information to be collected, its sources and collection procedure. Since the study sought to establish learners with the condition of down-syndrome and its effect on their academic performance, a phenomenological research design was used. Phenomenology is an approach to qualitative research that focuses on the commonality of a lived experience within a particular group. The

fundamental goal of the approach is to arrive at a description of the nature of the particular phenomenon (Creswell, 2013). Typically, interviews were conducted with a group of individuals who had first-hand knowledge of the situation or experience. The interview(s) attempts to answer two broad questions (Moustakas, 1994): What have you experienced in terms of the phenomenon? What contexts or situation have typically influenced your experiences of the phenomenon (Creswell, 2013)? Other forms of data such as documents, observations and art may also be used. The data is then read and reread and culled for like phrases and themes that are then grouped to form clusters of meaning (Creswell, 2013). This design was appropriate since it allowed the researcher to construct the universal meaning of the situation or experience of the learners with the condition of down-syndrome and arrive at a more profound understanding and describe the specific phenomenon in –depth and reach at the essence of learners’ lived experience of the phenomenon. The design chosen is embedded in qualitative method. For this study, this was hoped that it helped to give a basis for analyzing the prevailing situation and assist to draw recommendations that could be used for future decision making and prospective research about the learners with the condition of down-syndrome and its effect on their academic performance.

### **3.4 Target Population**

Alvi (2016) describes target population as all the members who meet the particular criterion specified for a research investigation. Further, Burns and Grove (2009) defines target population as the entire aggregation of respondents that meet the designated set of criteria. The target population for this study was drawn from the teachers and learners from two institutions which were a school special unit and a hospital special unit. Other respondents considered in this study were the Education Standards Officer for special education ((ESO-Special).

### **3.5 Sample Size**

Kombo and Tromp (2013) defines a sample size as the actual number of individual or objects that constitute a given sample. In this study, the sample size had 25 participants. The breakdown of this sample size was 1 Education Standard Officer (ESO-Special), 2 head -teachers, 2 guidance teachers (1 from each institution), 12 special education and 8 down-syndrome learners.

### **3.6 Sampling Technique/Procedure**

According to Kothari (2016) sampling procedure is the process of collecting participants, places and objects to participate in any given study. There are two sampling designs that help in this process; these are non-probability and probability designs. However, this research used non probability sampling technique such as purposive and quota sampling. According to Cresswell (2012) purposive sampling is non-probability sampling procedure or technique where the

researcher focuses on particular characteristics that were of interest which would best enable him or her to answer his or her research questions. This sampling procedure has also an advantage in that the purpose of the study can be fulfilled even with a small sample which is picked purposely and carefully. Saunders et al (2012) define quota sampling as a sampling method of gathering representative data from a group.

Meanwhile, purposive sampling technique was used to select a sample based on their Knowledge about the study. These included 1 Education Standard Officer (ESO-Special), 2 head teachers and 2 guidance teachers (1 from each institution) and 12 teachers and 8 down-syndrome learners. On the other hand, quota sampling technique was used to select 8 learners with down-syndrome according to gender (4 males and 4 females).

### **3.7 Data Collection Instruments/Methods**

According to Seaman (2008) data collection instruments refer to devices used to collect data such as questionnaires, tests, structured interview schedules and checklists. The following instruments were used in this research to collect data from the respondents; semi-structured interviews, focused group discussions and observation checklist. The three instruments were used in this research because of triangulation such that when certain data was left out by one instrument, it was covered in another.

#### **3.7.1 Semi-structured Interview**

According to Blandford (2013) semi-structured interview is a qualitative research method that typically involves interviews that combines a pre-determined set of open ended questions (questions that prompt discussions) with the opportunity for the interviewer to explore particular themes or responses further. In this research, the semi-structured interview was used on Education Standard Officer for Special Education (ESO-Special), head teachers and guidance teachers. The justification to use the semi-structured interview was that the flexibility of the structure interview allowed the researcher to prompt or encourage the interviewees if they were looking for more information or find what they were saying interesting. This method also gave the researcher the freedom to probe the interviewees to elaborate or to follow a new line of inquiry introduced by what the interviewee was saying. Semi-structured interviews also allowed informants the freedom to express their views in their own terms. In order to back up the short written notes, the researcher used a digital voice recorder to capture every other relevant information which might have been missed during note taking or could have been missed by the researcher.

### **3.7.2 Focus Group Discussions**

Eeuwijk and Angehrm (2017) is a qualitative research method and data collection technique in which a selected group of people discusses a given topic or issue in-depth. Focus group discussion is perceived to be a cost-effective and promising alternative in participatory research offering a platform for differing paradigms or worldviews (Guba and Lincoln, 2017). Focus group discussion employ group interviews (Parker and Tritte, 2006).

In order to capture views and perceptions of the teachers who teach learners with down-syndrome from the two institutions, teachers of special education from the school special unit and hospital special unit, a focus group discussion (FGD) guide was prepared for them to specifically answer research questions.

The most compelling reason why the researcher used focus group discussion was the need to generate discussion or debate about a research topic that required collective views and the meanings that lie behind those views (including their experiences and beliefs). In addition, the researcher used focus group discussion to explore a topic, obtained information or narratives for use in the later stages of the research, for example testing narratives.

### **3.7.3 Observation Checklist**

According to Meehan et al (2002) an observation checklist is a list of things that an observer is going to look at when observing a class. The observation checklist was prepared according to the objectives of the research. The three objectives were as follows; identify the conditions of learners with down- syndrome which have effect on their academic performance, assess the effect of the conditions of learners with down- syndrome on their academic performance and examine measures that could be taken in addressing the effect of the conditions of learners with down-syndrome on their academic performance.

The observation checklist was used to observe teachers and learners with down-syndrome from the two institutions. This was used by the researcher to observe classroom practices. The researcher observed eight sessions of teachers teaching and learners learning for thirty minutes per session. The advantage of this approach was that the researcher was able to get first-hand information from the classroom practices. However, the procedures for conducting classroom observation involved the researcher sitting in the classroom and make use of the observation check list to record the classroom proceedings as they occurred. The observation checklist was suitable in a qualitative study because observation took place in the area where the study phenomenon took place and this was a classroom of learners with the condition of down-syndrome and their

teachers. Additionally, it helped to assess the variability of classroom behaviour either within or between instructional programs.

### **3.8 Data Collection Procedure**

According to Whitney (2002) data collection is the process of gathering and measuring information on variables of interest in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluated outcomes. The procedure for collecting qualitative data for this study was as follows: The researcher obtained permission from Kwame Nkrumah University Ethics Committee for carrying out research work. After that, the researcher obtained permission from the Kitwe District Education Board Secretary's office to carry out research work at a school special unit. Similarly, permission was sought from the hospital management to carry out research work at the hospital special unit. Once, permission was sought from the District Education Board Secretary, the researcher then went to a school special unit and sought permission from the head teacher to carry out the research in the institution. Thereafter, the researcher obtained consent from participants through the signing on the consent form in order to either agree or disagree to take part in the research.

Thereafter, the researcher administered each instrument to the targeted respondents. The semi structured interview was administered to the Education Standard Officer for special education (ESO-Special), head teachers and guidance teachers. The researcher conducted face to face interview to the head teachers and guidance teachers in the room that was assigned to the researcher by the head teachers of the institution. On the other hand, the Education Standard Officer for special education (ESO-Special) was interviewed in his office. Two focus group discussions in groups of six (6) was administered to special education teachers of learners with down-syndrome from the two institutions; from the school special unit and hospital special unit. The discussions were done in a room which the head teachers of the institutions arranged for the researcher. The observation checklist was used to observe teachers and learners with down-syndrome from the two institutions. The researcher conducted the observations in classes in two (4) sessions for each unit which lasted 30 minutes. Furthermore, the researcher then consulted the respondents which information to include in the report and they were assured that the information was used for academic purpose and their names were not to be mentioned.

### **3.9 Data Analysis**

According to De Vos et al (2005) data analysis is a process of bringing order, structure and meaning to the collected data. Data analysis involved editing, coding and thematic analysis. Waal (2011) contends that data editing is the process to review and adjustments of collected survey

data. In this research, data editing helped the researcher to review the data for consistency, detection of errors and outliers (values that are extremely larger or smaller than the rest of the data) and correction of errors, in order to improve the quality, accuracy and adequacy of the data and made it suitable for the purpose for which it was collected. After data editing, coding of data was next. Smith and Davies (2010) assert that data coding is a method to organize the data so that underlying messages portrayed by the data may become clearer to the researcher. The purpose of data coding was to bring out the essence and meaning of the data that respondents provided. In the coding of data the researcher assigned values, percentages or other numerical quantities to draw inferences. Similarly, by ensuring that the information on the schedule was accurate and categorized in suitable form, the data was put together in some pie charts and some bar charts.

Thematic analyses were used in qualitative data after coding and arranging it in themes. Thematic analysis basically refers to topics or major themes that come out of the interviews or discussion (Cresswell, 2015). In analyzing qualitative data the researcher employed thematic analysis where the researcher formed themes under each objective around the question that was asked. In this approach all the relevant data from various data streams (interviews, observations and focus group discussion) was collaborated to provide a collective answer to a research question.

### **3.10 Ethical Considerations**

Mantzorou (2011) defines ethical considerations as research ethics applied in the daily life research endeavours and requires that researchers should protect the dignity of their subjects and publish well the information that is researched. Ethical concerns were adequately addressed in this study. To start with, permission was sought from Kwame Nkrumah Ethics Committee for the authority to carry out the research. After that, the researcher obtained permission from the Kitwe District Education Board Secretary's office to carry out a research work at a special unit at one school. Similarly, permission was sought from hospital management to carry out research work at the hospital special unit. Once, permission was sought from the District Education Board Secretary, the researcher then went to the special unit at the school and sought permission from the headteacher to carry out the research in the institution. Then informed consent was sought from the respondents after informing them about the importance of the study. Furthermore, respondents were assured that data collected from them was to be kept strictly confidential and was not to be used for the purpose other than the intended one (academic purpose). The researcher also conducted the research in privacy and kept information obtained privately. The researcher ensured she observed anonymity where the names of sites and respondents were concealed unless permission sought from the owners to have their identity disclosed as a show case for certain achievements made in their schools.

### **3.11 Measures of Trustworthiness**

According to Guba and Lincoln (2017) trustworthiness refers to the way in which qualitative research workers make sure that transferability, credibility, dependability, and confirmability are evident in the study. The purpose of trustworthiness in qualitative research was to support the argument that the inquiry results are worth paying attention to (Guba and Lincoln, 2017). The measures of trustworthiness in this research were credibility and dependability.

#### **3.11.1 Credibility**

According Irene and Albine (2018) credibility is the equivalent of internal validity in quantitative research and is concerned with the aspect of truth-value. Credibility established whether the research findings represent plausible information drawn from the participants' original data and is a correct interpretation of the participants' original views. To ensure credibility the researcher used the strategy of triangulation where three instruments were used namely; semi-structured interview, focus group discussion and observation checklist. A gap in one instrument was supplemented by the other.

#### **3.11.2 Dependability**

Dependability relates to the primary challenge that the way in which a research is carried out needs to be consistent across time, researchers and analysis techniques (Irene and Albine 2018). To ensure dependability the researcher used inquiry audit of the research process from data collection through analysis to interpretation as well as involve participants' evaluation of the findings and recommendations of the study such that all were supported by the data as received from participants of the study. Additionally, dependability ensured through semi-structured interview, focus group discussion and observation checklist.

### **3.12 Summary**

This chapter looked at the methodology which was employed in this study. The study employed the interpretive paradigm because the findings of this study depended on the interpretation of the participants' responses. In this research a phenomenological research design was employed due to the fact that the design chosen focused on the commonality of a lived experience within a particular group. The chapter also looked at a population and sample from the hospital special unit and school special unit in Kitwe, sampling techniques procedure, data collection instruments, data collection procedure, data analysis, ethical considerations as well as measures of trustworthiness.

## CHAPTER FOUR

### PRESENTATION OF THE FINDINGS

#### 4.1 Overview

This chapter presents the findings of the study according to different groups of themes in line with the objectives of the study. The objectives of the study were to: identify the conditions of learners with down-syndrome which affected their academic performance, assessing the effect of the condition of learners with down-syndrome on their academic performance and examining measures that could be taken in addressing the effect of the condition of learners with down-syndrome on their academic performance. The presentation of the findings were centered around the questions asked in line with the research objectives in the three research instruments namely interview, focus group discussion and observation check list.

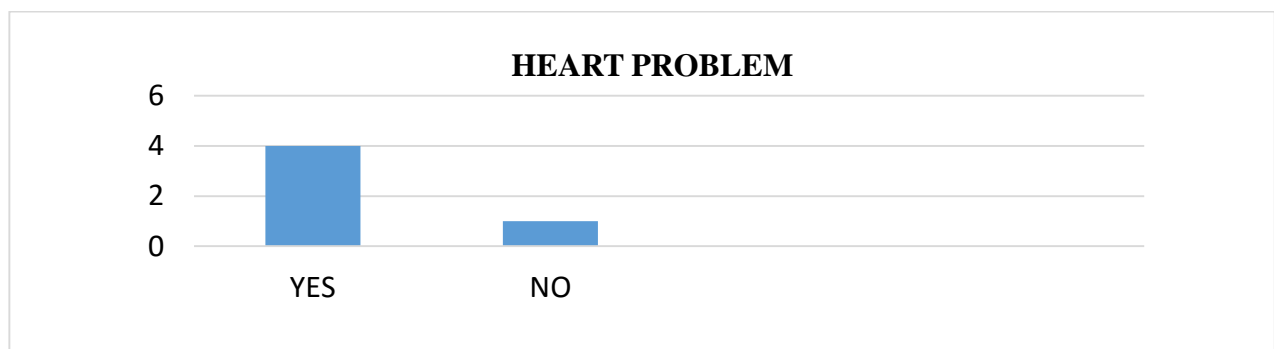
#### 4.2 Identified Conditions of Learners with Down-syndrome which affected on their Academic Performance

In order to identify the conditions of learners with down-syndrome which had effect on their academic performance, information was collected from Education Standard Officer for special Education, head-teachers, guidance teachers and special teachers. It was discovered that learners with down-syndrome had conditions which had effect on their academic performance. This is reflected in the findings from the respondents as presented under each sub theme namely heart problem, low vision and hearing difficulties, poor muscle tone and social interaction difficulties as shown below.

##### 4.2.1 Heart Problem

The researcher conducted interviews to find out if learners with down-syndrome had heart problem which had effect on their academic performance.

Figure: 4.2 Responses concerning learners with down-syndrome having heart problem from respondents.



The researcher administered an interview to find out if learners with down-syndrome had heart problem or not. Figure 4.2 responses show that some learners with down-syndrome had heart problem. This is reflected in the responses from the Education Standard Officer for special Education, head teachers and guidance teachers.

The respondents' answers were reflected in the following responses. For instance, responses from the head teachers were as follows, one head-teacher respondent from school 'A' echoed that, "*we had one learner who had a heart problem and died*". Another head-teacher respondent from school 'B' said that, "*we have one learner who has a heart problem and has undergone a heart surgery*". Similarly, responses from guidance teachers were as follows, one guidance teacher respondent from school 'A' narrated that, "*we have a girl who has a medical report of having a heart problem.*" Another guidance teacher respondent from school 'B' reported that, "*there's one learner with down- syndrome, a boy who has heart problem*". Yet one respondent from the office of the District Education Board stated that, "*I have never seen any learners with the condition down- syndrome with heart problem*".

The researcher carried out an observation at a special unit at school 'A' in a classroom of learners combined with different disabilities and were of different levels starting from level one to three. The teacher was teaching Special Physical Education (SPE) and asked the individual learners to produce their bean bags from their respective homes. The researcher observed that one learner with down-syndrome did not have a bean bag and he looked weak. According to the researcher's observation, the learner in question did not come to school for the previous days when the teacher wrote notes to their parents asking them to sew bean bags for their children to bring with them to school. The teacher introduced the lesson using a song and asked learners to form a circle. Learners were instructed, one by one to start picking a bean bag from the box in the middle of the circle after the teacher mentioned a name and then passed it to the friend who also passed it over to another. The researcher observed that the learner with the condition of down-syndrome who did not come with the bean bag because he was absent could not pay attention to the activity when it was his turn to pick the bean bag as he was not active. The learner struggled to bend and pick the bean bag and kept holding it without passing to the friend next to him. The teacher tried to remind the learner but he completely failed to participate and seemed not to know what to do in that entire activity.

After picking the bean bag activity, the teacher introduced a running activity where by learners were asked to run towards the buckets put in front of them with the ball in their hands competing who would put the ball in the bucket first. The learner with down-syndrome who did not come with the bean bag was told by teacher not to participate and sit down.

The researcher tried to inquire from the teacher after the lesson why the learner with down-syndrome was absent and did not come with a bean bag. The teacher responded that the learner had a heart problem and did not come to school because he was bed ridden at home. From the teacher's response the researcher noted that some learners with down-syndrome had a condition of heart problem. The researcher further inquired from the teacher why he could not participate in any activities given to him. The teacher's response was that, the learner had not yet fully recovered and he was still feeling pain due to heart problem. The researcher observed that heart problem in learners with down-syndrome had effect on their concentration during lessons and it affected their class attendance when they were sick.

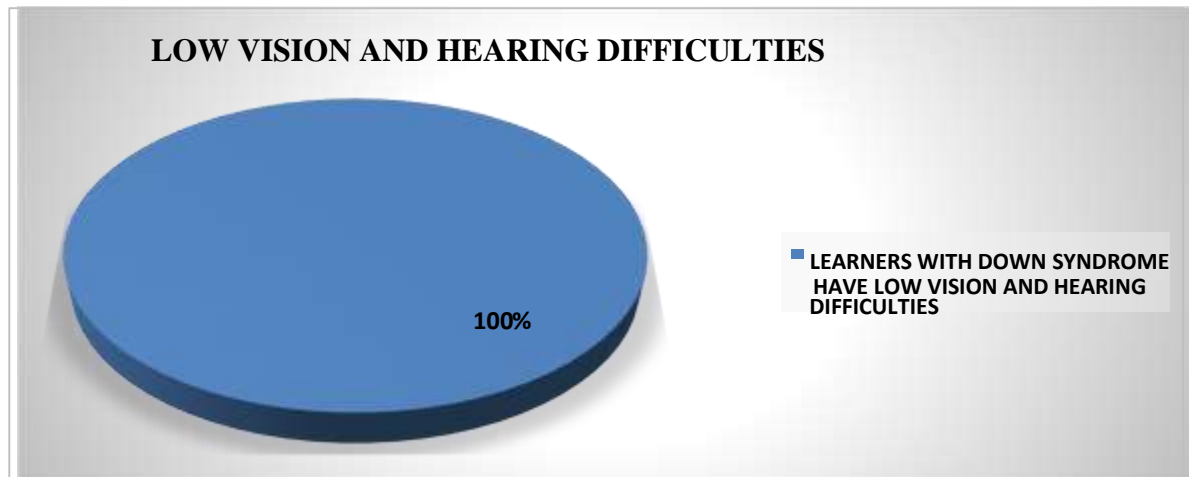
The researcher also wanted to be sure of the findings from information collected concerning whether learners with down-syndrome had heart problem or not. The researcher conducted the focus group discussions to confirm the results. During focus group discussions, one different view which was raised during interviews was cleared up. The issue which was raised from interviews was that one respondent disagreed that had never seen a learners with the condition of down-syndrome having heart problem. Even during focus group discussion the majority showed it clearly that some learners with the condition of down-syndrome had heart problem. For instance, one teacher from school 'A' stated that, "*not all learners with the condition of down-syndrome have heart problem but only some*". Another teacher from school 'A' voiced that, "*some learners have heart problem and not all.*" Another teacher from school 'A' added that "*we have two learners with heart problem and they have medical reports but other learners have no heart problem*". Furthermore, another teacher from school 'B' reported that, "*some learners have heart problem, for instance, in my class I had one learner who had a heart problem later died*". Another teacher from school 'B' echoed that, "*not all learners with down-syndrome have heart problem but some have, for example, one learner who had a heart problem has even undergone a heart surgery*".

Basing on this empirical evidence concerning the identification of learners with the condition of down-syndrome having heart problem, it was discovered that some learners had heart problems and died, some learners had heart surgery, some were having medical report of heart problem and others did not have heart problem. In this case, learners with the condition of down-syndrome have heart problem while others do not.

#### **4.2.2 Low Vision and Hearing Difficulties**

The researcher conducted interviews to find out if learners with down-syndrome had low vision and hearing difficulties which had effect on their academic performance.

Figure: 4.3 shows responses concerning learners with down-syndrome having low vision and hearing difficulties from respondents.



An interview was administered to find out if learners with down-syndrome had low vision and hearing difficulties or not. Figure 4.3 all the responses shows that learners with down-syndrome had low vision and hearing difficulties. The responses from the Education Standard Officer for special Education, head-teachers and guidance teachers are reflected below.

The respondents' answers were reflected in the following responses. For instance, responses from the head teachers were as follows, one head teacher respondent from school 'A' said that, *"One girl has low vision which made her to be missing classes"*. Another head teacher respondent from school 'B' reported that, *"we have learners (a boy and girl) who have low vision and they have difficulties to see things clearly"*. In addition, responses from guidance teachers were as follows, one guidance teacher respondent from school 'A' explained that, *"I have come across three learners with down-syndrome at our school who have hearing difficulties"*. Another guidance teacher respondent from school 'B' pointed out that, *"I have heard that some learners with down-syndrome have hearing difficulties"*. Another respondent from the office of the District Education Board reported that: *"I have seen some learners with down-syndrome who have low vision and wear lenses"*.

The researcher conducted a lesson observation from school 'B' at a special unit in a class of learners combined with different disabilities and were of different levels starting from level one to three. The teacher was teaching science on the importance of water to the plants. The teacher introduced the lesson by displaying different types of flowing plants. The researcher observed that one learner with down-syndrome stood up from the desk behind and went in front to go and have a closer view of the plants displayed by the teacher.

The teacher asked learners one by one to pick any plant and say the colour of its flower. When it was the turn of the learner who was observed going in front earlier to have a closer look at the plants, he was seen taking the plant closer to his eyes to see it clearly. The researcher noted that some learners with down-syndrome had low vision. When the teacher asked the learner to mention the colour of the flower, the learner mentioned 'yellow' instead of 'orange' the researcher observed that low vision had effect on the ability of the learner to distinguish colours.

The teacher had different cups displayed on the table in front containing different kinds of liquids that is; water, juice, tea, and milk. The teacher asked learners one by one to identify water which was important for plants to grow in any of the cups. The learner with down-syndrome having low vision picked a cup containing tea instead of the one containing water. The researcher observed that low vision had effect on the ability for learners with down-syndrome to see things clearly.

During the writing activity, the teacher displayed a chart showing a drawing of a man watering the plants and the teacher asked learners to draw it in their exercise books. The learner with down-syndrome having low vision could not come up with a proper drawing as he was seen fidgeting and struggling to see the drawing displayed. Moreover, the learner did not even complete his drawing.

During the same lesson observation, another learner with down-syndrome was observed to have hearing difficulties or hard of hearing. This was seen when she was told to go and pick a cup and identify which one contained water. The learner was observed picking a cup and drunk the content in it and when the teacher asked her why she did that, the learner replied that she thought she was told to pick any cup and drink the content. The researcher observed that hearing difficulties had effect on down-syndrome learners' ability to follow oral instructions and understand explanations.

It was necessary for the researcher to confirm whether learners with the condition of down-syndrome had Low vision and hearing difficulties or not. The researcher administered a focus group discussion to teachers of special education. The response from the focus groups discussions was that some learners with down-syndrome had low vision and hearing difficulties. This is confirmed in their responses.

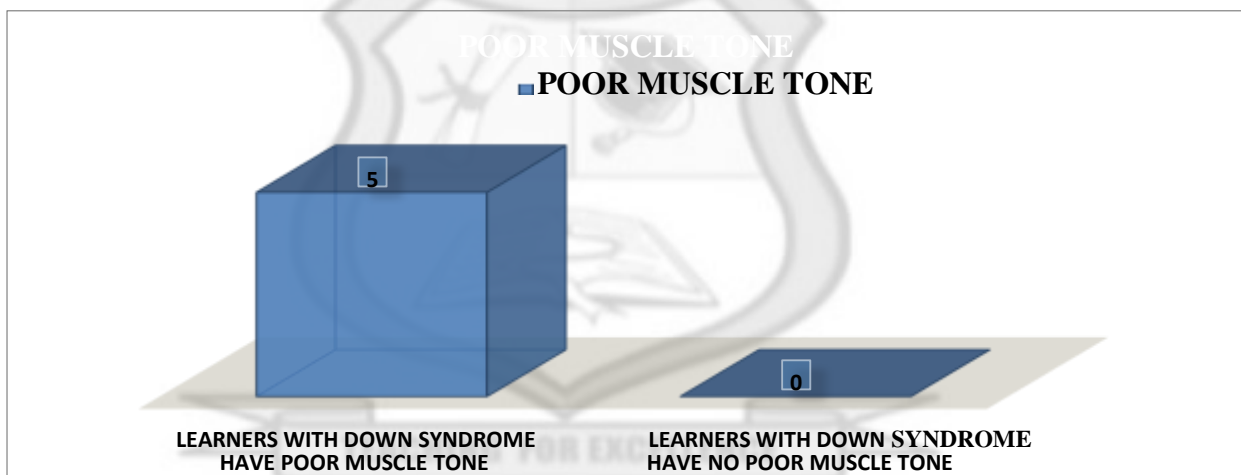
For example, one teacher from school 'A' said that, "*I have seen some learners with down-syndrome having low vision but not all*", while another teacher from school 'A' also said that, "*Some learners with down-syndrome have hearing difficulties and use hearing aids*". Another teacher from school 'B' voiced out that, "*Some learners with down-syndrome have low vision while others do not*". Another teacher from school 'B' stated that, "*I have some learners with down-syndrome who have low vision and hearing difficulties while others do not*".

Basing on this empirical evidence concerning the identification of learners with the condition of down-syndrome having low vision and hearing difficulties, it was discovered that some learners had low vision and hearing difficulties, some with low vision were not seeing things clearly, some learners had hearing difficulties were not hearing properly, some learners tilted their ears towards the one talking in order to hear, some learners were tapped on for them to respond to the teacher and others did not have low vision and hearing difficulties. In this case, learners with the condition of down-syndrome have low vision and hearing difficulties while others do not.

#### 4.2.3 Poor Muscle Tone

In order to establish if learners with down-syndrome had poor muscle tone or not, information was collected through interviews from head teachers, guidance teachers from two schools and from Education Standard Officer for special Education. All the respondents gave common responses and agreed that some learners with down-syndrome had poor muscle tone.

Figure: 4.4 Responses concerning learners with down-syndrome having poor muscle tone from respondents.



The researcher administered an interview to find out if learners with down-syndrome had poor muscle tone or not. Figure 4.4 all the responses shows that learners with down-syndrome had poor muscle tone. This is reflected in the responses from the Education Standard Officer for special Education, head teachers and guidance teachers.

The respondents' answers were reflected in the following responses. For example, responses from the head teachers were as follows, one head-teacher respondent from school 'A' indicated that, "Some learners with down-syndrome have poor muscle tone because they fail to sit upright for a long time". The other head-teacher respondent from school 'B' also said that, "some learners have poor muscle tone because they fail to hold or grip pencils properly". Furthermore, responses from guidance teachers were as follows, one guidance teacher respondent from school 'A'

explained that, “*we have a girl who has a medical report of having poor muscle tone in legs and arms.*” Another guidance teacher respondent from school ‘B’ echoed that: “*I have a learner with down-syndrome who has poor muscle tone and when she is writing, she easily gets tired and sleeps on the desk and often doesn’t complete her work*”. Another respondent from the office of the District Education Board reported that, “*I have seen one learner with down-syndrome having poor muscle tone*”.

The researcher carried out an observation at a special unit at school ‘A’ in a classroom of learners combined with different disabilities including down-syndrome. The learners were of different levels starting from level one to three. The teacher was teaching Activity for Daily Living on the sequence of dressing skills. The lesson was introduced by the teacher with a song ‘*ifiefyo tusamba kumenso lyonse ulucelo.....*’ After singing the teacher asked all the learners to take off their stockings and shoes. It was observed that one learner with down-syndrome could not manage to take off the shoes as he was not even able to unfasten them. The teacher helped the learner to unfasten the shoes and asked him to take them off. The learner was observed to struggling with the given task. The learner was observed to lack muscle strength in the hands and the researcher noted that poor muscle tone had effect on fine motor skills of learners with down-syndrome.

Furthermore, the teacher helped the learner to take off the shoes and put them in front of him. Then the teacher asked all the learners to get their shoes which they had taken them off and put them on again. It was observed that the learner who did not manage to take his shoes off could not even locate the left and right shoe correctly and was just helped by the teacher who gave them to him to put on. It was noted that the learner could not put on the shoes correctly and fasten them up. At the same time the learner was also observed failing to stand and bend to do the activity because he lacked muscle strength in the body. The researcher observed that poor muscle tone had effect on the gross motor skills, posture and learners were not able to complete the tasks given to them.

During focused group discussion, the researcher wanted to confirm with the teachers of special education whether the learners with down-syndrome had poor muscle tone or not. The responses reflected in the answers from the teachers indicated that some learners with down-syndrome had poor muscle tone. For example one teacher from school ‘A’ said that, “*some learners with down-syndrome have of poor muscle tone and others do not*”. Another teacher from school ‘A’ explained that, “*Some learners with down-syndrome have poor muscle tone this is seen in their failure to hold the pencil when they are wring*”. Furthermore, another teacher from school ‘B’ confirmed with no doubt that, “*Some learners with down-syndrome have poor muscle tone*”.

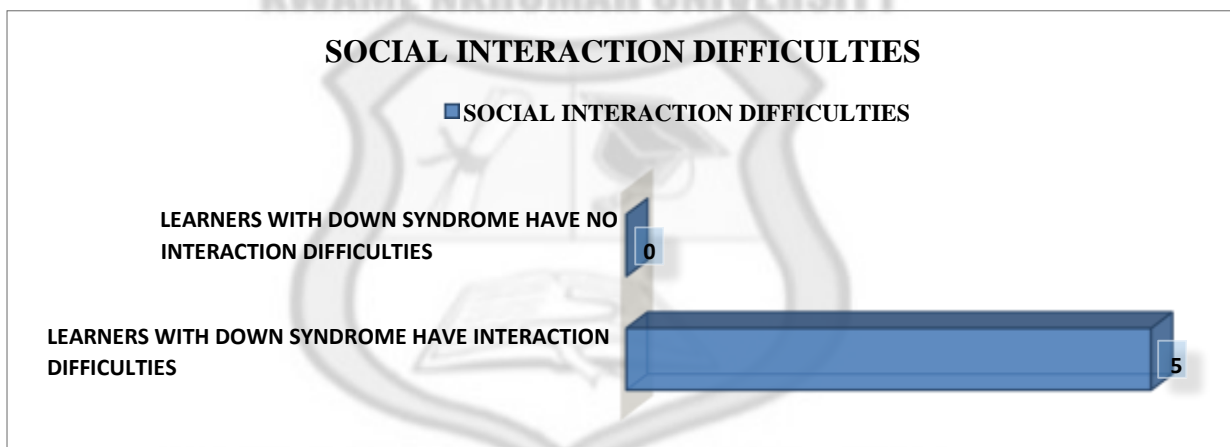
because of their failure to perform activities like running, jumping and walking”. Another teacher from school ‘B’ responded that, “learners with down-syndrome have poor muscle tone such that they just lay on the mat most of the time”.

Basing on this empirical evidence concerning the identification of learners with the condition of down-syndrome having poor muscle tone, it was discovered that some learners had poor muscle tone and had medical report of having poor muscle tone, some learners were sometimes taken to the hospital for physiotherapy, and others did not have poor muscle tone. In this case, learners with the condition of down-syndrome have poor muscle tone and others do not.

#### 4.2.4 Social Interaction Difficulties

The researcher conducted interviews to find out if learners with down-syndrome had social interaction difficulties which had effect on their academic performance.

Figure: 4.5 Responses that learners with down-syndrome having social interaction difficulties or not from respondents



The researcher administered an interview to find out if learners with down-syndrome had social interaction difficulties or not. Figure 4.5 all the responses show that learners with down-syndrome had social interaction difficulties. This is reflected in the responses from the Education Standard Officer for special Education, head-teachers and guidance teachers.

The respondents’ answers were reflected in the following responses. For instance, responses from the head teachers were as follows, one head-teacher respondent from school ‘A’ explained that, “learners with down-syndrome have social interaction difficulties since they like to fight too much”. Another head teacher respondent from school ‘B’ said that, “Learners with down-syndrome tend to isolate themselves”. Furthermore, responses from guidance teachers were as follows, one guidance teacher respondent from school ‘A’ responded that, “I am aware of social interaction problems for learners with down-syndrome and this makes it had to teach them”. Another guidance teacher respondent from school ‘B’ indicated that, “learners with down-

*syndrome have interaction difficulties because of their problem with communication*". Another respondent from the office of the District Education Board reported that, "*learners with down-syndrome have social interaction difficulties especially those with speech problems*".

The researcher conducted a lesson observation from school 'A' at a special unit of learners combined with different disabilities with down-syndrome inclusive. The class consisted of learners of three levels. The teacher was teaching Expressive Arts on molding things from clay. The lesson was introduced with a song and finger exercises and individual learners were asked one by one to go in front and do a finger exercise and dance to a song. The researcher noticed that one learner could not participate in that activity. When the friends tried to remind him to go in front, he refused and became aggressive towards them.

After the lesson introduction, the teacher displayed on the table in front different toys made from clay. The teacher asked learners to mention each of them and asked them to mention the material which was used to make those items. Some of the pupils answered that the toys were made from clay 'iloba'. The teacher later displayed a big lump of wet clay and demonstrated to the learners by moulding a pot, plate, car and cow. Then the teacher also asked learners to mould things of their choice from clay. Each learner was asked to get a bit of clay from the table and use it to mould. It was observed that one learner with down-syndrome came and took the whole lump of clay and water, went, sat alone in the corner and started molding. The learner was observed not even to allow the other learners from getting some clay and water which he grabbed from the table. The teacher got the clay and water from him and shared them among his friends. The researcher observed that the learner got very annoyed, sat alone facing the wall and did not even participate in the activity. The researcher observed that some learners with down-syndrome had social interaction difficulties which had effect on their academic performance.

The researcher conducted a focus group discussion with teachers of special education handling learners with special needs in order to confirm if learners with the condition of down-syndrome had social interaction difficulties or not. All of the respondents revealed that some learners with the condition of down-syndrome had social interaction difficulties which had effect on their academic performance. For instance, one teacher from school 'A' narrated that, "*we have some learners with down-syndrome having social interaction and they like sitting in isolation*". Another teacher from school 'A' echoed that, "*learners with the condition of down-syndrome who have social interaction difficulties are aggressive to other learners*". In addition, another teacher from school 'B' answered that, "*Speech problems affect learners with down-syndrome on their*

*interaction with other peers*". Another teacher from school 'B' categorically stated that, "*we have a learner with down-syndrome with social interaction difficulties*".

Basing on this empirical evidence concerning the identification of learners with the condition of down-syndrome having social interaction difficulties, it was discovered that some learners had social interaction difficulties, isolated themselves, some had speech problems leading to communication problems, some were aggressive and others did not have social interaction difficulties. In this case, learners with the condition of down-syndrome have social interaction difficulties while others do not have.

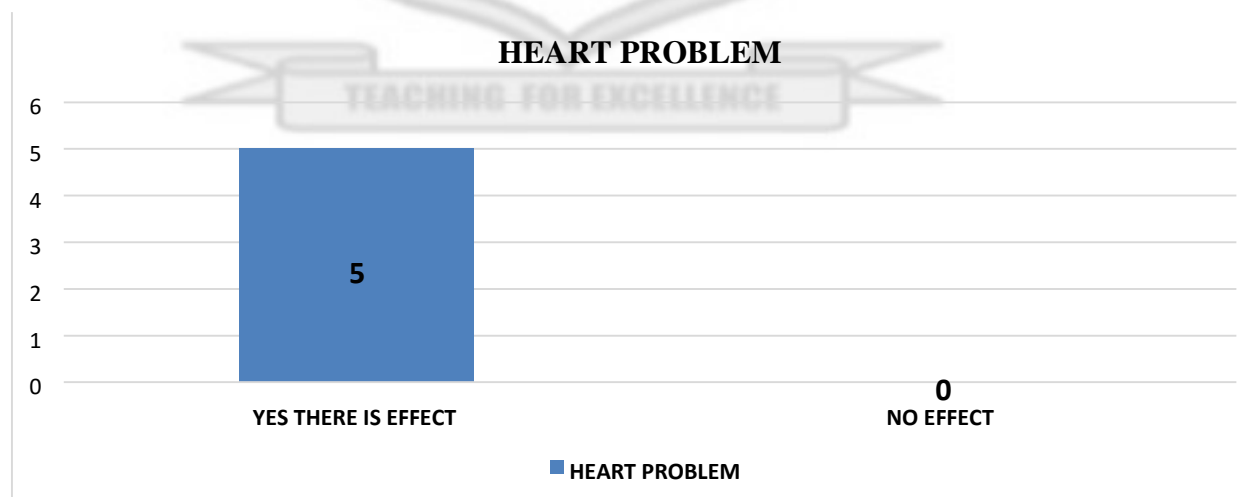
#### **4.3 Assessing the Effect of the Conditions of Learners with Down-syndrome on their Academic Performance**

The information that was collected from the respondents indicated that the conditions of down-syndrome had an effect on these learners' academic performance. The conditions of down-syndrome were heart problem, low vision and hearing difficulties, poor muscle tone and social interaction difficulties. The effects of each condition is reflected through responses from the respondents under each sub theme.

##### **4.3.1 Heart Problem**

The researcher conducted interviews to ascertain if heart problem had effect on some learners with down-syndrome.

Figure: 4.6 Responses concerning the effect of heart problem on learners with down-syndrome from respondents



The researcher administered an interview to find out if heart problem had effect on learners with down-syndrome or not. Figure 4.6 all the responses has shown that heart problem had effect on learners with down-syndrome. This is reflected in the responses from the Education Standard Officer for special Education, head-teachers and guidance teachers.

Some responses from the head teachers were as follows, for instance, one head teacher respondent from school 'A' echoed that *"learners with down-syndrome having heart problem do not concentrate when they are given activities and this affect their participation in class lessons"*.

Another head teacher respondent from school 'B' said that, *"learners with down-syndrome having heart problem do not understand when they are in pain and as such they fail to grasp the concepts being taught"*. Furthermore, some responses from the guidance teachers were as follows, one guidance teacher respondent from school 'A' explained that, *"they sometimes miss lessons due to hospitalisation as a result they miss what their friends had learnt and fail to catch up"*. Another guidance teacher respondent from school 'B' reported that, *"learners do not concentrate when they are given activities as they easily get tired and they do not do the given class activities correctly"*. Another respondent from the District Education Board answered that, *"They absent themselves due to pain thereby miss important academic activities which render them fail to progress academically"*.

The researcher carried out an observation at a special unit at school 'A' in a classroom of learners combined with different disabilities and were of different levels starting from level one to three. The teacher was teaching numeracy on identifying, counting and writing of numbers from 1 to 10 and the researcher observed that the teacher introduced the lesson using a song and dance where a learner mentioned a number and later danced to the song. The researcher observed that the two learners with the condition of down-syndrome could not dance as they looked weak.

After an introduction, the teacher started giving Individualized Activities (IEA) according to the ability and level of learners. The work varied from identifying and counting, tracing while others were copying numbers from the chalkboard into their exercise books. Similarly, other learners were simply copying the same number '5' repeatedly in the boxes drawn by the teacher in the exercise book. The researcher observed that one of the learners with down-syndrome who was in level two and who was observed not participating in the dance was copying the number '5' repeatedly to fill in the page did not concentrate during the given activity because when he was asked to write the same number '5' on the other page, he forgot completely.

The researcher further noted that the other learner with the condition of down-syndrome could not understand what was being taught by the teacher because the learner was observed being in pain and tired. This was evident when the learner could not identify some numbers between 1 and 10.

The researcher tried to inquire from the teacher after the lesson why the two learners with a condition of down-syndrome were not dancing, the teacher responded that the two learners have

a heart problem and one of them was recently discharged from hospital after a month, the one who was copying number '5' repeatedly. From the teacher's response the researcher noted that some learners with the condition of down-syndrome had heart problem. It was also observed that the teacher didn't do anything to encourage them to participate in that particular class activity as they were looking weak. The researcher further inquired from the teacher after the lesson why the other learner who was not discharged seemed to look weak and could not identify some numbers between 1 and 10 and the teacher's response was that, usually when he is looking like this is because he's feeling pain due to heart problem.

During the focused group discussion with special teachers handling learners with down-syndrome, the researcher wanted to confirm if heart problem had effect on the academic performance of learners with down-syndrome or not. The responses are reflected in their answers. For example, one teacher from school 'A' narrated that, *"When learners are experiencing pain, they fail to concentrate making them fail to progress academically"*. Another teacher from school 'A' said that *"Learners fail to concentrate when they are weak leading them to failing to grasp concepts"*. Another teacher from school 'A' replied that, *"some learners with down-syndrome having heart problem are constantly absent especially if they can't handle the pain anymore, this make them lag behind"*. Another teacher from school 'B' answered that, *"Some of these learners with down-syndrome having heart problem don't come to school due to hospitalisation which affects their test results when they are assessed back in school. In addition, another teacher from school 'B' echoed that, "learners do understand what is being taught by the teacher causing them to remain in the same level for many years"*.

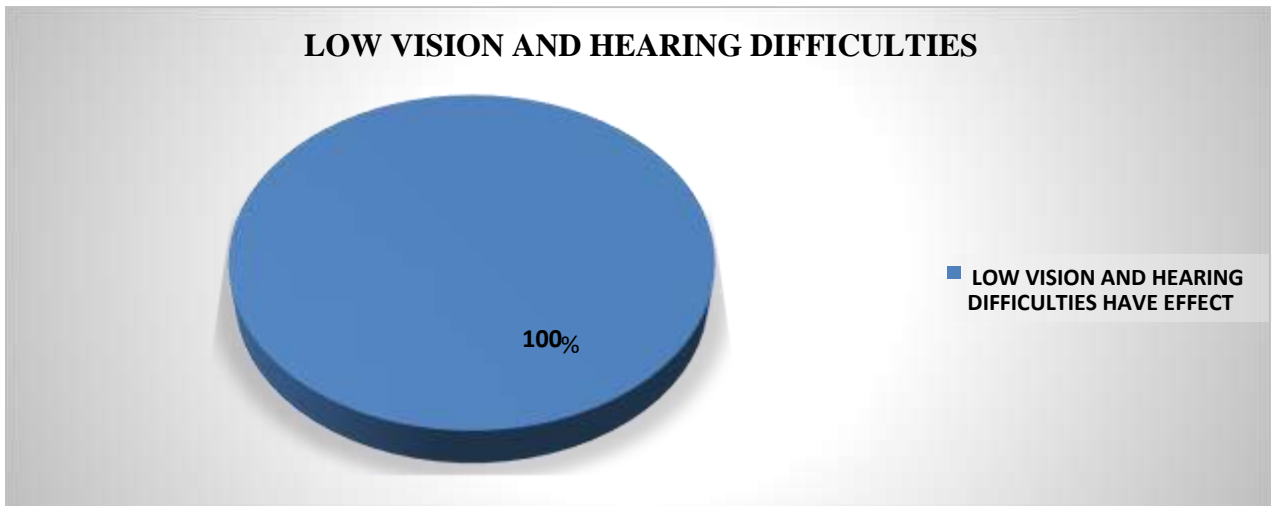
Basing on the study findings concerning the assessment of the effect of the condition of down-syndrome on the learners' academic performance, it was discovered that heart problem had effect on learners' concentration hindering them from participate in class activities, do class work wrongly, fail tests, on their understanding making them fail to grasp concepts and on their class attendance when hospitalized making them to lag behind. In this case, heart problem has effect on the academic performance of the learners with the condition of down-syndrome.

#### **4.3.2 Low Vision and Hearing Difficulties**

In order to establish if low vision and hearing difficulties had effect on the learners with down-syndrome, the researcher conducted interviews.

Figure: 4.7 Responses concerning the effect of low vision and hearing difficulties on learners with down-syndrome from respondents.

## LOW VISION AND HEARING DIFFICULTIES



An interview was administered by the researcher in order to establish whether Low vision and hearing difficulties had effect on learners with down-syndrome or not. Figure 4.7 all the responses have shown that low vision and hearing difficulties affected on learners with down-syndrome. This is reflected in the responses from the Education Standard Officer for special Education, head-teachers and guidance teachers.

Some responses from the head teachers were as follows, one head teacher respondent from school 'A' said that, *"learners with low vision have difficulties in reading because of having poor sight and this make fail to read properly"*. Another head teacher respondent from school 'B' reported that, *"learners with low vision have difficulties in writing which make them not to finish the given work on time as a result it leads them to fail class written exercises"*. Some responses from the guidance teachers were as follows, one guidance teacher respondent from school 'A' echoed that, *"Learners with low vision are not able to recognise shapes and distinguish colours especially those that look similar, this result in learners not knowing the concepts of shapes and colours"*. Another guidance teacher respondent from school 'B' elucidated that, *"learners with hearing difficulties do not follow the instructions and understand explanations because they easily forget as a result they tend to write wrong things contrary to the earlier instructions given"*. Another respondent from the District Education Board expressed that, *"learners with down-syndrome having hearing difficulties don't understand explanations given by the teacher, and this makes it difficult for the learners to do the activities accordingly"*.

The researcher conducted a lesson observation from school 'B' at a special unit in a class of learners combined with different disabilities and were of different levels starting from level one to three, the teacher was teaching numeracy on shapes. Teacher introduced the lesson using a song 'these are the shapes and this is the colour'. The teacher put two boxes in front of the classroom, one box contained different shape painted in different colours and another box contained cups in

different colours. Teacher asked learners to make a circle and go round the boxes singing a song while dancing. The teacher called learners at random and the learner would go in the circle to pick any shape from the box, flash it and say the name of the shape.

The researcher observed one learner with the condition of down-syndrome who picked the shape and brought it closer to her face for her to see it properly. The learner didn't even identify it properly, she said '*rectangle*' instead of '*square*'. After all the learners had picked the cards showing shapes from the box, the teacher then instructed learners to start picking cups from the other box. A similar procedure was used to pick the cups from the box in front as it was done with the shapes. The researcher observed another learner with the condition of down-syndrome who was asked to pick cups from the box and say the colour of the cups, picked two cups and brought them closer to his face and referred the colour orange as red and blue as green. The researcher observed that some learners with down- syndrome had low vision when the two learners with the condition of down-syndrome were seen bringing the drawing of the shape and the cups picked from the boxes closer to their eyes in order to identify them. From this activity which was done at the introduction stage, the researcher observed that low vision had effect on down-syndrome learner's ability to distinguish colours and recognise shapes.

After the introduction, the teacher displayed a chart with four different colored shapes with their names respectively. The shapes were the triangle, circle, square and rectangle. The teacher asked learners to read the names of the shapes. Learners with down –syndrome having low vision failed to read the names of the shapes from their chairs until when the teacher moved them closer to the chart were they able to struggle and read some names of the shapes like circle and square. From this incident itself, the researcher observed that low vision had effect on down-syndrome learner's ability to read. Later, the teacher gave the learners a writing activity where learners were asked to draw the shapes from the chart, colour them and copy down the names of the shapes. The researcher noticed that the two learners with down-syndrome having low vision were not able to draw proper shapes and could not even shape the letters correctly when writing names of the shapes. It was also observed that the learners had difficulties in writing because they were skipping some lines or letters in words as a result they ended up copying wrong things. The researcher also noted that low vision had effect on learners with down-syndrome's ability to write.

Furthermore, in the same lesson observation at the introduction stage when the teacher and the pupils were going round in a circle singing and dancing to the song '*these are the shapes and this is the colour*'. The researcher observed that one learner was called upon by the teacher to go inside the circle and pick a card showing a shape and say its name to the class. The learner could not

respond until the friends tapped on her to remind her that it was her turn to go and pick the shape. When the learner went in the circle she picked cups instead of shapes and was corrected by her friends that she was supposed to pick shapes and not cups.

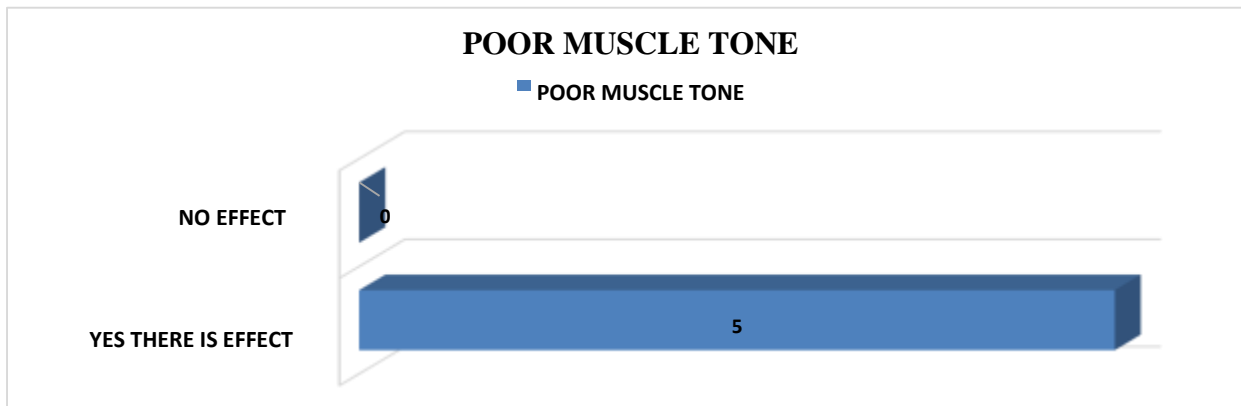
From the researcher's observation, some learners with down-syndrome had hearing difficulties. During the writing activity, the teacher asked learners to draw the four shapes, colour them and copy the names of the shapes. However, the learner with down-syndrome having hearing difficulties or hard of hearing ended up drawing four circles throughout and colored them with one colour without writing down the names of the shapes. The researcher observed that hearing difficulties had effect on learners with down -syndrome's ability to follow oral instructions and understand explanation given by the teacher.

It was imperative for the researcher to confirm whether low vision and hearing difficulties had effect on some learners with down-syndrome or not. The researcher conducted a focus group discussion with teachers of special education handling learners with down- syndrome and other disabilities. The response from the focus group discussion was that Low vision and hearing difficulties had effect on some learners with down-syndrome and this is confirmed in their responses. For instance, one teacher from school 'A' said that, *"low vision has effect on learners with down-syndrome's reading activity because they mix up letters such as 'p' and 'b' making them fail reading tests"*. Another teacher from school 'A' reported that, *"learners with down-syndrome having low vision write wrong things as they cannot see clearly. They do not copy words and letters correctly and their class work is affected"*. In addition, another teacher from school 'B' affirmed that, *"their reduced light sensitivity make them struggle to see and focus clearly on shapes and colours making them fail any given exercise or test on the same"*. In addition, teacher from school 'B' stated that, *"It's difficult for down-syndrome learners with hearing difficulties to follow the instructions and understand explanations as they easily forget"*.

Basing on the empirical findings concerning the assessment of the effect of the condition of down-syndrome on the learners' academic performance, it was discovered that low vision and hearing difficulties had effect on learners' academic performance as they failed to read properly, to write properly, to recognise shapes and distinguish colours as a result they did not acquire the knowledge and concepts of colours and shapes, to follow oral instruction and understand explanation, failed reading and written tests and they have short memory which makes what they have learnt fade away within a short period of time hence did not do the class activities correctly.

### 4.3.3 Poor Muscle Tone

The researcher conducted interviews to determine whether poor muscle tone had effect on learners with down-syndrome. Figure: 4.8 Responses concerning the effect of poor muscle tone on learners with down-syndrome from respondents



The researcher administered an interview to determine whether poor muscle tone had an effect on down-syndrome learners or not. Figure: 4.8 all the responses have shown that poor muscle tone had effect on learners with down-syndrome. This is reflected in the responses from the Education Standard Officer for special Education, head-teachers and guidance teachers.

Some responses from the head teachers were as follows, for instance, one head teacher respondent from school 'A' explained that, "*learners with poor muscle tone have difficulties in maintaining good posture which makes their bodies fatigues quickly as a result failing to finish the given written class tasks*". Another head teacher respondent from school 'B' said that, "*Learners with down-syndrome having poor muscle tone have problems in carrying out fine and gross motor tasks because they have reduced strength in their muscles and this hinders them to participate fully in drawing activities and physical activities such as jumping and throwing*". Some responses from the guidance teachers were as follows, for example, one guidance teacher respondent from school 'A' answered that, "*these learners with down-syndrome having poor muscle tone have poor posture which make them fail to work on the table properly and it affects their handwriting which the teacher fail to read and give them low scores*". Another guidance teacher respondent from school 'B' added that, "*poor muscle tone affects the learners hands which appear to be less firm as a result they fail to write properly any given class exercise*". Another respondent from District Education Board commented that, "*learners with poor muscle tone don't complete school tasks given to them because they get tired easily as a result they fail to comprehend all what the teacher is teaching*".

The researcher carried out an observation at a special unit at school 'A' in a classroom of learners combined with different disabilities including down-syndrome. The learners were of different levels starting from level one to three. The teacher was teaching on numeracy on addition of numbers from 1 to 15. The lesson was introduced by the teacher with finger exercises and writing in the air while singing a song. At this stage the researcher noticed two learners with the condition of down-syndrome, one was just sleeping on the mat struggling to sing and the other one was standing singing with his peers. Even if the other learner was standing, he was not standing upright and was not consistent in what he was doing because he could sometimes sit down. The researcher also observed that the other learner who was struggling to stand had difficulties in lifting up his hands, do finger exercises and write in the air. As for the one who was sleeping on the mat was not even able to lift up her hands.

After the introduction, the teacher gave individualized activity (IEA) according to their ability and level of learners. The work ranged from addition of single digit numbers; 1 to 5, addition of single digit numbers between 6 and 9 while others were doing addition of double digit numbers from 10 to 15. When writing, the researcher noted that the two learners with down-syndrome having poor muscle tone who were in level one were not able to sit upright on the chair, was writing while laying on her stomach on the mat and the handwriting was poor as she had difficulties with gripping of the pencil. The other learner was observed not sitting upright while he was writing the exercise and also problems of gripping of the pencil. Moreover, the learners were not even able to complete writing the whole task which was given to them as compared to their peers as they easily got tired and rested from time to time. Most especially the one who was on the mat could be seen laying down without doing anything for a long time. The researcher observed that poor muscle tone had effect on the down-syndrome learners' ability to complete tasks given by the teacher affecting their academic performance.

After the lesson, the researcher consulted the teacher about the two learners with down-syndrome why one was just lying on the mat and the other one could not stand upright for a long time during the class activity and was failing to lift his hands and do finger exercises. The teacher told the researcher that the two learners had poor muscle tone. The teacher further mentioned that the one sleeping on the mat had poor muscle tone which had affected her body as stated in the medical report. The researcher saw that poor muscle tone had effect on the posture, fine and gross motor tasks on these two learners with the condition of down-syndrome.

The researcher conducted focus group discussions with teachers who teach learners with Special Education where she authenticate whether poor muscle tone had an effect on learners with down-

syndrome or not. The responses from the focus group discussion was that poor muscle tone had effect on some learners with down-syndrome and this is confirmed in their responses.

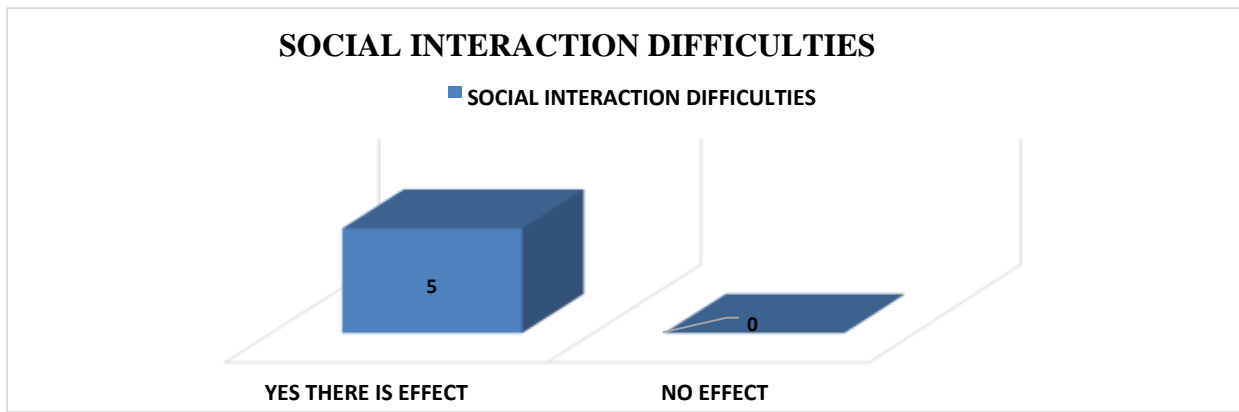
One teacher from school 'A' said that, *“poor muscle tone has effect on learners with down-syndrome’s posture as they tire easily hence they fail to complete the given task which make them fail an exercise or test”*. Another teacher from school 'A' responded, *“Learners down-syndrome learners have problems in carrying out gross motor tasks because they lack balance and this affects their participation in physical education”*. Another teacher from school 'A' narrated that, *“learners with down-syndrome having poor muscle tone lack balance as a result they fail to compete with their peers favorably in physical exercises Likewise, another teacher from school 'B' held that, “learners with down-syndrome having poor muscle tone get tired quickly as such they fail to complete the tasks given to them”*. Another teacher from school 'B' supported, *“learners with down-syndrome having poor muscle tone fail to complete school tasks given to them because they have reduced strength in their muscles and this affect their academic work”*.

Basing on the empirical findings concerning the assessment of the effect of the condition of down-syndrome on the learners' academic performance, it was discovered that poor muscle tone had effect on learners' posture as they failed to sit upright while working on the table, got tired easily, failed to complete tasks making them fail class exercises and tests, failed to progress to the next grade level, fine motor tasks making them have difficulties in writing and drawing and gross motor tasks hindering them to participate in physical activities. In this case, poor muscle tone had effect on the academic performance of learners with the condition of down-syndrome.

#### **4.3.4 Social Interaction Difficulties**

The researcher conducted interviews to find out if social interaction difficulties affected the learners with down-syndrome.

Figure: 4.9 Responses concerning the effect of social interaction difficulties on learners with Down-syndrome from respondents. All the respondents said that social interaction difficulties affected the learner's academic performance.



It was in order for the researcher to establish whether social interaction difficulties had effect on down-syndrome learners' academic performance or not. The researcher administered an interview. Figure: 4.9 all the responses have shown that social interaction difficulties have effect on learners with down-syndrome. This is reflected in the responses from the Education Standard Officer for special Education, head-teachers and guidance teachers.

Certain responses from the head teachers were as follows, one head teacher respondent from school 'A' indicated that, *"learners with social interaction difficulties don't have the ability to solve out a problem they feel shy to ask when they don't know and this affects them academically"*. Another head teacher respondent from school 'B' resonated that, *"some learners with down-syndrome have poor speech which affect productive language performance and it hinders them to fully participate in class work"*. Several responses from guidance teachers were as follows, one guidance teacher respondent from school 'A' answered that, *"social interaction difficulties has effect on learners with down-syndrome's ability to learn new words because of being anti-social they most of the time refuse to participate in the lesson"*. Another guidance teacher respondent from school 'B' stated that, *learners with social interaction difficulties don't have the ability to learn the spoken language easily they fail to express themselves in oral classroom activities"* Another respondent from the District Education Board stated that, *"Learners with social interaction difficulties have a problem to solve a problem because of communication problems hence it affects them not to carry out certain tasks"*.

The researcher conducted a lesson observation from school 'B' at a special unit of learners combined with different disabilities with down-syndrome inclusive. The class consisted of learners of three levels. The teacher was teaching literacy on vowels and syllables. The lesson was introduced with a song involving vowels and individual learners. Learners were asked one by one to go in front to mention a vowel sound and then asked to make a body expression of that vowel. The researcher noticed that one learner could not participate in that activity. When the friends tried to force him to go in front, he could refuse and threatened to beat them.

After the lesson introduction, the teacher wrote the syllables using the consonants and vowels of the alphabet on the chalk board. The researcher observed that while the teacher was explaining to the class about the lesson, the learner with down-syndrome having who was observed not participating in the activity during the introduction of the lesson was just lying on the desk facing to the wall alone. Then the teacher asked the learners to make simple words from the syllables and vowels which they had learnt orally. As the learners were raising their hands to the teacher and saying the answers orally, the researcher observed the boy shouting to the class without raising the hand, words such as 'a!' 'alipeele ifumo' when the friends were saying the appropriate learnt words such as 'abana, batata, abeni, aba'. Even if the learner shouted his answers in a disorderly manner, it was observed that he had the problem of pronouncing words. To the researcher's point of view, it was observed that social interaction difficulties had effect on learner's ability to learn new words easily. During group work, the teacher asked the learners to sort out consonants and vowels written on word card to make short words. The learner with down-syndrome having social interaction difficulties refused to work with his friends in groups and decided to join later at his own time. He started doing things wrongly and he did not even want any guidance from anyone.

The researcher observed that the learner under discussion was being corrected by the teacher on the appropriate language to use when greeting and talking to his teacher and his peers respectively. The learner could not learn the new language easily as he was seen to be using the language from home and his community such as "laka?" for greeting, "yalibindasa" to mean things are not alright and "umupondo" to mean friend. Also the researcher observed that the learner did not have a clear speech making it difficult for him to communicate effectively. The researcher observed that social interaction difficulties had effect on learners with down-syndrome's ability to learn new language.

On the aspect showing problem solving skills, the researcher observed that the learner was not able to carry out tasks like sweeping the classroom and he could not do the correct thing when he was sent. For instance, when the teacher deliberately sent him to buy sweets, he went outside for a long time and came back without buying anything and just came back with the money claiming there were no sweets when in fact sweets were there in the school tuck-shop.

After the lesson the researcher asked the teacher about the learner why he was not participating when he asked to, threatened to beat his friends and faced to the wall when the teacher was explaining. The teacher said that, that was his attitude most of the time when he didn't want to talk and wanted to be alone most of the time. For this reason, the researcher noted that some

learners with down-syndrome had social interaction difficulties which had effect on their academic performance.

The researcher conducted a focus group discussion with teachers of learners with Special Education where she to ratify whether social interaction difficulties had an effect on down-syndrome learner's academic performance or not. The responses from the focus group discussion were that social interaction difficulties had effect on their academic performance and this is confirmed in their responses.

For example, One teacher from school 'A' explained that, "*social interaction difficulties has effect on learners with down- syndrome because it makes them to be aggressive hence making it difficult to teach them*". Another teacher from school 'A' said that, "*some learners with down-syndrome have cognitive delay as such they mostly develop and learn more slowly than normal developing learners and this makes them not to progress to the next grade level*". Another teacher from school 'B' expressed that, "*learners with social interaction difficulties don't have the ability to learn the spoken language easily because they have hearing and auditory problem as such they miss some words which affect their expression in classroom participation*". Similarly, another teacher from school 'B' said that, "*some down-syndrome learners have difficulties with grammar and do not practice pronouncing new words*".

Basing on the study findings concerning the assessment of the effect of the condition of down-syndrome on the learners' academic performance, it was discovered that social interaction difficulties affected on learners' academic performance as they failed to solve any problem because of their ant social, they cannot ask for assistance from others when they do not know making them do the class work wrongly, fail to participate in class activities, they have hearing and auditory problem causing them to have short term memory, have cognitive delay as such they learn more slowly, fail to learn new words and language as they put in less attempt to learn when they are not in the mood learn and isolated themselves from others hence making them fail to use appropriate language and when they are aggressive it becomes difficult to teach them. In this case, social interaction difficulties has effect on the academic performance of learners with the condition of down-syndrome

#### **4.4 Examining Measures that could be taken in Addressing the Effect of the Condition of Learners with Down- syndrome on their Academic Performance**

In order to establish the measures that could be taken in addressing the effect of the condition of learners with down- syndrome on their performance academic, information was collected from various stakeholders. The researcher administered interviews with the Education Standard Officer

for special Education, head-teachers, guidance teachers and focus group discussions with teachers of special education on the measures for addressing the effect of the condition of learners with down-syndrome on their academic performance. The measures are reflected in their responses as presented in the four sub-themes below namely heart problem, low vision and hearing difficulties, poor muscle tone and social interaction difficulties.

#### 4.4.1 Heart Problem

The researcher embarked on identifying the suggested measures that could be taken to address the effect of heart problem on learners with down-syndrome's academic performance. The study discovered that heart problem had effect on down-syndrome learners not concentrating when they were given activities causing them not to do class activities correctly, not participate in class lessons making them lag behind in their academic work, not attending lessons regularly making them miss what their friends had learnt hence fail to catch with their peers in terms of their academic work, not understanding what was being taught by the teacher resulting in them failing the tests and other assessments making them fail to progress academically.

The researcher administered an interview to respondents in order to find out the measures that could be taken to address the effect of heart problem on the academic performance of learners with down-syndrome. The suggested measures to these effects were reflected in the responses from the Education Standard Officer for special Education, head-teachers and guidance teachers. Particular responses from the head teachers were as follows, for instance, one head teacher respondent from school 'A' submitted that, *"learners should be given less work to help them focus on the work within their short attention span"*. Another head teacher respondent from school 'B' proposed that, *"learners should be given resting time in order to refresh their minds and be energized then they will participate in class activities and complete tasks"*. Furthermore, some guidance teachers responses were as follows, one guidance teacher respondent from school 'A' recommended that, *the teacher should take work to the hospital and ask them to write when they feel better so that they do no lag behind"*. Another guidance teacher respondent from school 'B' suggested that, *learners should be given remedial work to help them catch up with their peers and this can help them progress to the next grade level"*. Another respondent from the District Education Board proposed that, *"Learners who are in pain due to heart problem should be advised to seek medical attention so that when their health improves they can start attending lessons regularly"*.

The researcher also conducted a focus group discussions with teachers of special education handling learner with disabilities and down-syndrome inclusive to find out what measures could

be put in place in order to address the effect of heart problem on learners with down-syndrome academic performance. For instance, one teacher from school 'A' suggested that, *"the teacher should use activities such as games and songs to stimulate their interest to learn"*. Another teacher from school 'A' recommended that, *"The teacher should draw closer to learners who are deemed not paying attention"*. Furthermore, another teacher from school 'B' suggested that, *"teachers should develop a modified learning system such as role playing involving the learners to arouse their attention"*. Another teacher from school 'B' suggested that, *"Such learners need a lot of remedial work"*. Another teacher from school 'B' advocated that, *"The teacher should teach using concrete objects"*.

Basing on the study findings concerning the measures that could be taken to address the effect of heart problem on learners with down-syndrome's academic performance, it was discovered that the effect could be addressed by advising Parents to take their children to the hospital and seek medical attention so that their health could improve for them to start attending lessons regularly, teachers to visit learners who are sick in hospital and take work for them to write when they have some strength so that they do not miss much, teachers should use activities such as games, songs, role plays, pictures and concrete objects to stimulate their interest to learn, give them less work which they can manage within their short attention span, teachers should use repetition drills to cement on the concepts being taught, give them different work easier from the others to lessen the stress and give them a lot of remedial work for them to understand. In this case these measures can help to improve the academic performance of learners with down-syndrome.

#### **4.4.2 Low Vision and Hearing Difficulties**

The study findings discovered that the effect of low vision and hearing difficulties on learners with down-syndrome were reading difficulties and lacking reading comprehension skills making the learners lag behind in reading leading them to dropping out of school, learners could not write causing them not to finish the given work on time leading them to fail class written exercises, learners lost focus on what they were writing as a result they ended up writing wrong information as they missed some letters in certain words rendering them to fail written tasks, learners failed to recognise shapes and distinguish and colours resulting in learners not knowing the concepts of shapes and colours, making them fail tests which required shape and colour identification, learners failed to follow the oral instructions and understand explanations given by the teacher resulting in learners do or write wrong things contrary to what is being taught hence they got bad grades and failed to progress.

When the respondents were asked about how best the effect of low vision and hearing difficulties of learners with down-syndrome on their academic performance could be addressed, the responses

from the Education Standard Officer for Special Education, head-teachers and guidance teachers are reflected in the following statements.

Some responses from the head teachers were as follows, for instance, one head teacher respondent from school 'A' advocated that, *“the teachers should use large prints/fonts to enable learners with low vision see the letters and word clearly”*. Another head teacher respondent from school 'B' suggested that, *“The teacher should give learners with down-syndrome having low vision extra time as low vision often need more time to do activities than those with normal vision”*. Some responses from guidance teachers were as follows, one guidance teacher respondent from school 'A' recommended that, *“the teacher should also give learners a handout of any notes or instructions while explaining verbally to make learners not forget”*. Another guidance teacher respondent from school 'B' proposed that, *“the teacher should put colour chart and shapes chart to enable learners see different colours and shapes every day and master them”*. Another respondent from the District Education Board suggested that, *“the teacher should advise the parents to take their children to the hospital so that they can be provide with hearing devices and lenses”*.

During the focus group discussions with special education teachers from two schools, the researcher asked questions in order to determine the measures that could be taken to address the effect of low vision and hearing difficulties on the academic performance of learners with the condition of down-syndrome. The suggestions are reflected in their responses below. For example, one teacher from school 'A' advised that, *“the teacher should give learners time to rest and less work to help them not to strain their eyes for a long time”*. Another teacher from school 'A' suggested that, *“visual aids and picture reading books should be in large print for them see clearly”*. Another teacher from school 'A' suggested that, *“the teachers should be reading with the learners loudly as this will help them follow the lesson systematically and they will not lag behind”*. Another teacher from school 'B' proposed that, *“close the classroom door whenever teaching and learning is taking place so that noise from outside does not interfere”*. Another teacher from school 'B' suggested that, *“the teacher should put the colours and shapes in good light without glare for the learner to see”*. Another teacher from school 'B' recommended that, *“the teacher can also help the learner engage with the rest of the class by making the learner sit in a group where he or she will be able to see and respond to others in the class”*.

Basing on the empirical evidence concerning the measures that could be taken to address the effect of the condition of down-syndrome on the learners' academic performance which emanated from low vision and hearing difficulties, it was discovered that the effect could be addressed by using

large prints, low vision devices such as magnifiers and telescopes for reading, teachers should also position learners where they see better in the shade or in bright light, give time to learners to rest and give them extra time to do the work, parents should be advised to take their children to the hospital so that lenses and hearing aids can be prescribed in order to help them see and hear clearly, appropriate writing tools should be used, use proper contrast when teaching shapes and colours such as light shapes and light colours against dark background, activities such as discrimination of different colours and shapes, matching colours and shapes and sorting colours and shapes can be used in order help learners acquire the knowledge of colours and shapes, give instructions or explanations written on handouts or on the board for them to follow while the teacher is making explanation, make use of facial expression, body language, finger spellings or sign language as well as use of concrete, practical and pictorial methods, face the learners when teaching and close the classroom door to prevent the interference of noise from outside. In this case these measures can help to improve the academic performance of learners with down-syndrome having low vision and hearing difficulties.

#### 4.3.3 Poor Muscle Tone

The researcher carried out a research to determine the measures that could be taken to address the effect of poor muscle tone on learners with down-syndrome on their academic performance. The study showed that poor muscle tone had effect on down-syndrome learners' posture, which made their bodies fatigue quickly and fail to sit erect as a result they failed to complete the given school tasks, made them fail to work on the table properly affecting their handwriting, they lacked concentration making them fail to participate fully during the lesson, they failed to carry out fine and gross motor tasks making them fail to write properly any given class exercise and participate physical activities, making them to lag behind in class work as compared to their peers.

Respondents were asked what measures could be taken to address the effect poor muscle tone on the academic performance of learners with down-syndrome. The responses from the Education Standard Officer for Special Education, head-teachers and guidance teachers are reflected in the following statements.

For example, responses from the head teachers were as follows, one head teacher respondent from school 'A' suggested that, "*the teacher should provide support chair chairs to help learners not to get tired quickly and be able to complete school tasks*". Another head teacher respondent from school 'B' proposed that, "*learners must be given less work as this will help them perform well in writing activities*". Some responses from the guidance teachers were as follows, one guidance teacher respondent from school 'A' recommended that, "*the teacher should tell parents to seek physiotherapy treatment for their children to help them correct their posture making them not to*

*lag behind*". Another guidance teacher respondent from school B advised that, *"the teacher should extend time to allow those who are slow to finish writing"*. Another respondent from the District Education Board answered that, *"the teacher should allow learners to rest and ask them to continue doing the given task after wards"*.

The researcher conducted a focus group discussions with special education teachers from two schools in order to establish the measures that could be taken to address the effect of poor muscle tone on the academic performance of learners with the condition of down-syndrome. Their answers are presented in the following statements.

For instance, one teacher from school 'A' recommended that, *"the teacher should teach the learners how to sit and remind them always as this will help them to pay attention as the teacher is teaching"*. Another teacher from school 'A' suggested that, *"learners should be reminded on how to sit upright as this helps them to strengthen their muscles and stop getting tired easily"*. Another teacher from school 'A' suggested that, *"the teacher should put learners in groups by mixing them with those who are fast so that they assist one another"*. Another teacher from school 'B' suggested that, *"cutting using scissors help strengthen fine motor skills as well as improve hand eye coordination and concentration"*. Another teacher from school 'B' answered that, *"the teacher should advise parents to take their children to the hospital to receive occupational or physiotherapy services"*. Another teacher from school 'B' advised that, *"the teacher should encourage learners to do finger exercises daily to make the finger muscles strengthened"*.

Basing from the practical evidence concerning the measures that could be taken to address the effect of the condition of down-syndrome on the learners' academic performance which stemmed from poor muscle tone, affects their posture, the study revealed that the effect could be addressed by the teacher providing support chairs with cushions which could help learners not to get tired quickly, teacher should remind the learners to sit upright, parents should be advised to seek physiotherapy treatment for their children to help them improve their muscle strength, the teacher should do finger exercises with the learners, learners must also be given less work and allow them to rest to help them perform well in writing activities, teacher should engage learners in out-door physical activities, teachers must give positive reinforcement to learners as a way to motivate them and learners should be given additional time to allow them finish writing. In this way these measures can help to improve the academic performance of learners with down-syndrome.

#### **4.3.4 Social Interaction Difficulties**

As regards to the measures that could be taken to address the effect of social interaction difficulties on the academic performance of learners with down-syndrome, information was collected from

various stake holders and teachers of special education handling learners with different disabilities including learners with down-syndrome through interviews and focus group discussions. The study indicated that social interaction difficulties had effect on down-syndrome learners' ability to solve a problem resulting in them not being responsible, fail to ask when they do not know and that affects them academically as compared to their peers, learners failed to learn the spoken language and new words easily which affected them in oral activities, they had hearing and auditory problem causing them to have short term memory, had cognitive delay as such they learnt more slowly, they failed to participate in class activities, failed tests or exercises that require spellings and to communicate properly using appropriate words like other peers.

During the interviews, respondents were asked on the measures that could be taken to address the effect of social interaction difficulties on down-syndrome learners' academic performance. The Education Standard Officer for Special Education, head-teachers and guidance teacher respondents provided different answers as reflected in their responses. Some responses from the head teachers were as follows, for example, one head teacher respondent from school 'A' recommended that, "*the teacher should frequently engage learners in a lot of activities which require problem solving and see if they can do a right thing*". Another head teacher respondent from school 'B' suggested that, "*teach them repetition drills involving the language and new words the teacher want them to learn, this will help them not to forget*". Some responses from the guidance teachers were as follows, one guidance teacher respondent from school 'A' guided that, "*the teacher should teach the learners one word at a time because it will assist the learners to master words properly and avoid confusing words*". Another guidance teacher respondent from school 'B' submitted that, "*teach the learners repetition drills involving the language this will help them not to forget*". Another respondent from the District Education Board suggested that, "*the teacher must encourage the learners to be watching television and listening to the radio as it will help learn a lot of language*".

The researcher conducted the focus group discussions with special education teachers from two institutions of learning where she asked questions in order to determine the measures that could be taken to address the effect of social interaction difficulties on the academic performance of learners with the condition of down-syndrome. The teacher respondents provided different answers which are presented below.

For instance, one teacher from school 'A' recommended that, "*the teacher should give them some work to research to see if they can do the right thing*". Another teacher from school 'A' suggested that, "*the teacher should try to give the learners practical activities to do like mopping or sweeping the classroom and observe if they can perform the task correctly*". Additionally, another

teacher from school 'B' advocated that, *"the teacher should encourage learners with down-syndrome having social interaction difficulties to participate in activities that involve social interaction"*. Another teacher from school 'B' offered that, *"parents should seek the help of speech therapists so that their children can learn to speak properly for others to understand them and this can improve their interaction socially"*.

From the empirical evidence concerning how the effect of the condition of down-syndrome on the academic performance of learners deriving from social interaction difficulties, it was discovered that the effect of social interaction difficulties could be addressed by the teacher engaging learners in a lot of activities which required problem solving and see if they could do the right thing, teachers should also use repetition drills, games, group work, and role plays and songs involving the language and the words as this would help them not to forget, teach using different mediums like television, radio, picture word matching, flash cards to help learn a lot of language and words, teach learners phonics, sounds or vowel sound as it will help them have good pronunciation, teach the learners one word at a time to assist them master words properly to avoid confusing words. In this way these measures can help to improve the academic performance of learners with down-syndrome.

#### **4.5 Summary**

This chapter presented the findings of the study which aimed at identifying the condition of learners down-syndrome which had effect on their academic performance in special unit classrooms in Zambia. Heart problem, low vision and hearing difficulties, poor muscle tone and social interaction difficulties were identified as the conditions of down-syndrome. It also discussed the effect of the condition of learners with down-syndrome on their academic performance. Heart problem made learners to lack concentration, not understand what is being taught, and miss lessons due being hospitalised. Low vision caused learners with down-syndrome fail to focus on words and sentences they were reading, writing and wrote wrong things, confused colours and hearing difficulties, learners had short term memory and difficulties in processing the information they hear. Poor muscle tone had effect on learners' posture and fail to complete the given tasks as they easily got tired, their gross and fine motor hence had poor handwriting and failed to participate in physical education activities. Social interaction difficulties had effect on the learners' ability to solve out a problem, fail to learn and use appropriate words and language and isolated themselves. The chapter further disclosed the measures to be taken in order to address the effect of the condition of down-syndrome on the learners' academic performance. One of the measures arising from heart problems, was to advise parents to take their children to the hospital to seek medical attention so that their health could improve for them to start attending lessons

regularly and give them remedial work, teachers to visit learners who are sick in hospital and take work for them to write when they have some strength. For learners with low vision, teachers to use large prints, low vision devices as magnifiers when reading, use proper contrast when teaching shapes and colours such as light shapes and light colours against dark background. For hearing difficulties, teachers to give instructions written on a hand out while giving instructions and explanations, finger spellings or sign language and parents to seek medical attention. Learners with poor muscle tone to be provide with support chairs with cushions to help improve their posture and not get tired quickly, parents to seek physiotherapy treatment. For social interactions difficulties, learners to participate in oral activities like drama, problem solving activities and parents to see the speech therapist.



## **CHAPTER FIVE**

### **DISCUSSION OF THE FINDINGS**

#### **5.1 Overview**

This chapter discusses the findings of the study. The study investigated on the condition of down-syndrome which had effect on learners' academic performance. The findings are discussed according to different categories of the themes in accordance with the objectives of the study. Thus the discussion was based on the following objectives; identify the condition of learners with down-syndrome which affected their academic performance, assessing the effect of the condition of learners with down-syndrome on their academic performance and examine measures that could be taken in addressing the effect of the condition of learners with down- syndrome on their academic performance. The findings of this study will be discussed in the light of the theoretical framework of the International Classification of Functioning, Disability and Health Model (ICF) by world Health Organisation (2001) of learners with down-syndrome and their academic performance. The discussion of the research findings will end with a summary.

#### **5.2 Identifying Condition of Learners with Down-syndrome which Affected their Academic Performance**

The findings of this study have shown that learners with down-syndrome have conditions which affect their academic performance and this will be discussed under the subthemes namely heart problem, low vision and hearing difficulties, poor muscle tone and social interaction difficulties.

##### **5.2.1 Heart Problem**

The study found that some learners with down-syndrome had the condition of heart problems which affected their academic performance. For instance, some learners with heart problem had died, some had heart surgery and others were having medical report of heart problem. This is reflected in responses where one of the respondents stated that *“we had one learner who had a heart problem and had undergone a heart surgery”*. The findings of this study are in agreement with the findings of the study which was conducted in Morocco Casablanca by Benhaourech, Drighil and El-Hammiri (2016) on the congenital heart disease and down-syndrome. The study found that congenital heart disease is frequently described in patients with Down-syndrome and is the main cause of death. Although the study discovered that heart problem can lead to death of learners with down –syndrome, it did consider that some learners can have heart surgery and be given a medical report of heart problem which are found in this study.

The findings of this study are in line with the theoretical framework of International Classification of Functioning, Disability and Health Model (2001) which states that running activities may require an individual cardiovascular and respiratory system which are often impaired in a learners

with down- syndrome. Similarly, this study found that some learners with down- syndrome had heart problem which had effect on their academic performance. Although the current study discovered that heart problem can lead to death of learners with down –syndrome which were not found in this model.

For this reason, some learners with the condition of down have heart problem. This could have had an effect on their academic performance.

### **5.2.2 Low Vision and Hearing Difficulties**

The study found that some learners with down-syndrome had the condition of low vision and hearing difficulties which affected their academic performance. Some learners had low vision and hearing difficulties, some with low vision were not seeing things clearly, some who had hearing difficulties were not hearing properly and others tilted their ears towards the one talking in order to hear. For example, this is reflected from one of the respondents who stated that, *“I have some learners with down-syndrome who have low vision and hearing difficulties while others do not”*.

The findings of this study are similar with the findings of Down-syndrome International (2006) who conducted a research in Zimbabwe on the plight of people with down-syndrome in Africa and education and found that learners with down-syndrome have auditory and visual impairments which affect their academic performance. However, the current study discovered more apart from establishing that learners with down-syndrome have visual and hearing problems by revealing that not all learners with down-syndrome had low vision and hearing impairment some did not.

The findings of this study are in line with the theoretical framework of the International Classification of Functioning, Disability and Health Model (2001) which postulates that children with down- syndrome have sensory impairment of hearing and visual which affect their cognitive performance, memory and academic learning. Although the current study highlighted more that some learners with down- syndrome had low vision and hearing difficulties while others did not which was not mentioned by the International Classification of Functioning, Disability and Health Model (2001).

This implies that some learners with the condition of down-syndrome have low vision and hearing difficulties which could have posed an effect on their academic performance.

### **5.2.3 Poor Muscle Tone**

The current study found that the learners with down-syndrome had poor muscle tone which affected their academic performance. Some learners had poor muscle tone and had medical report of having poor muscle tone, learners were getting tired easily and failed to write and others were

sometimes taken to the hospital for physiotherapy. This was reflected in one of the responses given by one respondent who confirmed that, *“I have a learner with down-syndrome who has poor muscle tone and when she is writing, she easily gets tired and sleeps on the desk and often doesn't complete her work”*.

The findings of the current study concerning the identification of the condition of down-syndrome which has effect on their academic performance were consistent with what was discovered by Amel et al (2016) who conducted a research in Cairo on perceptual motor outcomes in Egyptian on down-syndrome children following the straining. The researcher disclosed that children with down-syndrome have deficits in aspects of movement such as timing, balance and coordination as well as physiological aspects such as muscle tone and strength. Their study further said that they have a wide variety of physical and functional disabilities. Although Amel et al (2016) did not specify that learners get tired and fail to write because of the poor fine motor muscle tone of their fingers which this current study has unveiled.

The findings of this study are similar with findings of the theoretical framework of the International Classification of Functioning, Disability and Health Model (2001) which contends that children with down -syndrome have orthopedic condition in which performance of motor skills are often affected. In the same vein, the current study found that some learners with down-syndrome had poor muscle tone which had effect on their academic performance.

Due to this factor, some learners with the condition of down-syndrome have poor muscle tone which could have had effect on their academic performance.

#### **5.2.4 Social Interaction Difficulties**

The study found that learners with of down-syndrome had the condition of social interaction difficulties which affected their academic performance. The study discovered that some learners had social interaction difficulties and isolated themselves, others were aggressive making it difficult to teach them and other learners with down-syndrome did not have social interaction difficulties. For example this is reflected from one of the respondents who reported that, *“we have some learners with down-syndrome having social interaction and they like sitting in isolation”*.

The findings of this study are in agreement with the findings of the study conducted in Zambia on down-syndrome and education by Down-syndrome International (2018) on investigating the learning profile of a person with down-syndrome. The findings of the study revealed that children with down-syndrome exhibit delays across developmental areas of social, cognition, communication and self-help and these inhibit learning. Nevertheless, the study did not consider highlighting on learners with down-syndrome-syndrome having social interaction difficulties

isolating themselves and being aggressive making it difficult to teach them which the current study discovered.

The findings of this study are related to the findings of the theoretical framework of the International Classification of Functioning, Disability and Health Model (2001) which observes that social skills are affected in the learners with down- syndrome and this affects the acquisition of the developmental mile stones such as reading, writing, speaking and cognitive. It further states that in a school environment, learners with down-syndrome exhibit social interaction difficulties which include abilities to think, problem solving, and communication. Nevertheless, this study also found that some learners with down- syndrome had social interaction difficulties while others did not. They were sometimes aggressive making it difficult to teach them which was not found in this model.

This means that in a school environment learners with down-syndrome exhibit social interaction difficulties which include abilities to think, problem solving, and communication as these could have effect on down-syndrome learners' academic performance.

### **5.3 Assessing the effect of the Condition of Learners with Down-syndrome on their Academic Performance**

The findings of the study discovered that the conditions of down-syndrome had effect on learners' academic performance. These conditions of down-syndrome and their effect on the learners' academic performance will be discussed under the following themes; heart problem, low vision and hearing difficulties, poor muscle tone and social interaction difficulties.

#### **5.3.1 Heart Problem**

The study found that heart problem had effect on down-syndrome learners for not concentrating when they were given activities due to pain causing them not to do class activities correctly, not understanding what was being taught by the teacher resulting in them not participating in class lessons making them lag behind in their academic work, not attending lessons regularly making them miss what their friends had learnt hence fail to catch up with their peers academically, fail the tests and other assessments making them fail to progress academically. This is reflected in one of the respondents who reported that *“learners with down-syndrome having heart problem do not concentrate when they are given activities and this affect their participation in class lessons”*.

The findings of this study are comparable to the study which was conducted on academic outcomes in children with congenital heart defects in down- syndrome in Atlanta by Oster et al (2017) who revealed that children of all types of congenital heart defects have poorer academic

outcomes compared to their peers. However, the researchers did not specify how the condition of congenital heart defects effects on the academic performance in learners with down-syndrome by bringing out aspects such as lack of concentration due to pain leading to not understanding fully what the teacher is teaching in class and absenteeism due to hospitalisation which makes the pupil miss class lessons regularly hence making the pupil to lag behind and failing the tests and other assessments making them fail to progress academically which this current study discovered.

The findings of this study are coherent with the findings of the theoretical framework of International Classification of Functioning, Disability and Health Model (2001) which states running activities may require an individual cardiovascular and respiratory system which are often impaired in a learner with down- syndrome. The model further emphasized that in school the child with down- syndrome with heart problems will encounter difficulties such as lack of concentration when the teacher is teaching because of the pain and not understanding fully. Additionally, there is a lot of absenteeism due to hospitalisation which make them miss what their friends had learnt.

Although this study discovered more about learners failing the tests and other assessments making them fail to progress academically and heart problem causing death which is not found in the model.

The findings show that lack of concentration when the teacher is teaching because of the pain and not understanding fully and a lot of absenteeism due to hospitalisation because of heart problem in learners with down-syndrome might have contributed to their negative academic performance.

### **5.3.2 Low Vision and Hearing Difficulties**

The study findings discovered that the effect of low vision and hearing difficulties on learners with down-syndrome were reading difficulties and lacking reading comprehension skills making the learners lag behind in reading leading them to dropping out of school, learners could not write causing them not to finish the given work on time leading them to fail class written exercises, learners lost focus on what they are writing as a result they ended up writing wrong information as they missed some letters in certain words rendering them to fail written tasks, learners failed to recognise shapes and distinguish and colours resulting in learners not knowing the concepts of shapes and colours, making them fail tests which requires shape and colour identification, learners failed to follow the oral instructions and understand explanations given by the teacher resulting in learners do or write wrong things contrary to what is being taught hence they got bad grades and failed to progress. This is evident from what one of the respondents who voiced that “*learners with low vision have difficulties in reading because of having poor sight and this make fail to read properly*”.

The findings of this study are harmonised with the study conducted by Moss (2014) in Spain on hearing and vision loss associated with down-syndrome. According to Moss hearing loss in children with down-syndrome may cause them to have auditory short term memory which cause them to have difficulties in processing information they hear for example words and their meanings, instructions and numbers. Moss's study further stated that low vision in children with down-syndrome may make children have difficulties in viewing what is being presented to them in class and at the same time learners may tire easily when reading and doing close work because of straining their eyes which can have an effect on their academic performance.

Additionally, the study revealed that low vision and hearing loss which occur in children with down-syndrome cause learners have challenges in their educational programing. However, the researcher did not mention other effects of Low vision on the academic performance of learners with down-syndrome such as difficulties in writing activities which affects learners' speed and legibility of writing, lacking reading comprehension skills making the learners lag behind in reading leading them to dropping out of school, learners failing to recognise shapes and distinguish colours resulting in learners not knowing the concepts of shapes and colours, making them fail tests which requires shape and colour identification, learners failing to follow the oral instructions and understand explanations given by the teacher which the current study discovered

The findings of this study are in agreement with the theoretical framework international Classification of Functioning Disability and Health Model (2001) which postulates that children with down- syndrome have sensory impairment of hearing and visual which affect their cognitive performance, memory and academic learning. For instance, a learner with down-syndrome having a hearing loss may have cognitive processing difficulty that may affect perception of words. Hearing loss may also affect the auditory perception and they may have short-term memory of having limited capacity for storing and processing information they hear, such as words and their meanings, instructions and numbers. On the other hand, low vision can cause difficulties in academic learning for instance, in reading and writing activities as well as distinguishing colour and recognizing shapes due to poor sight which may limit the acquisition of academic knowledge, skills and concepts. The vision and hearing loss which occurs in children with down-syndrome can mean significant problems for these children in any educational setting.

Although the current study highlighted more difficulties resulting from the effect of low vision and hearing difficulties such as learners failed to follow the oral instructions and understand explanations given by the teacher resulting in learners doing or writing wrong things contrary to what is being taught hence they got bad grades and failed to progress and lacking reading

comprehension skills making the learners lag behind in reading leading them to dropping out of school, in addition to what was discovered in the model.

Based on the findings on the effect of low vision and hearing difficulties with learners with down-syndrome on their academic performance, this means that failure to read and write by learners and failure to follow instruction and understand explanation given by the teacher might have postured an effect on their academic performance.

### 5.3.3 Poor Muscle Tone

The study showed that poor muscle tone had effect on down-syndrome learners' posture, which made their bodies fatigue quickly and fail to sit erect as a result they failed to complete the given school tasks, made them fail to work on the table properly affecting their handwriting, they lacked concentration making them fail to participate fully during the lesson, they failed to carry out fine and gross motor tasks making them fail to write properly any given class exercise and participate physical activities, making them to lag behind in class work as compared to their peers. For instance this is reflected from one of the respondent who stated that, *"Learners with down-syndrome having poor muscle tone have problems in carrying out fine and gross motor tasks because they have reduced strength in their muscles and this hinders them to participate fully in writing and drawing activities and physical activities such as jumping and throwing"*.

The findings of this study are in conflict with the study of Latash, Wood, and Ulrich (2008) who carried a research in Pennsylvania on what is currently known about hypertonia, motor skill development, and physical activity in down-syndrome. According to them, one of the important issues in the study of motor development in people with down-syndrome is whether there is delay in achieving milestones or whether movements are abnormal or not properly suited for their purpose. Nevertheless, the study of Latash, Wood, and Ulrich did not high spot on whether hypertonia in children with down-syndrome had effect on their academic performance such as causing learners to get fatigued quickly, have poor posture, have poor persistence to fine and gross motor tasks, difficulties in working at the table, difficulties with handwriting and drawing and not completing school tasks, lack concentration making them fail to participate fully during the lesson which the current study unveiled.

The findings of this study were consistent with the theoretical framework of the International Classification of Functioning Health and Disability Model (2001) which contends that children with down-syndrome have orthopedic condition in which performance of motor skills are often affected. It further stated the common difficulties often experienced by learners with down-syndrome having poor muscle tone among them are; fatigues quickly, poor posture and poor

persistence to fine and gross motor tasks. In school a learner with the condition of down-syndrome having poor muscle tone has trouble in sitting erect and working at a table, may lean on one hand when drawing and writing and may tire very quickly. Additionally, he or she has difficulties with handwriting and drawing, and tends to fidget and does not complete school tasks. Nonetheless this study stressed on more difficulties faced by the learner with down-syndrome having poor muscle tone such as lacking concentration making them fail to participate fully during the lesson, failing a given class exercise making them to lag behind in class work as compared to their peers which was not found in this model.

The research result was in agreement with what was discovered in the study concerning the effect of poor muscle tone on the academic performance of learners with down-syndrome. It could be that the difficulties often experienced by learners with down- syndrome having poor muscle tone affected their academic performance.

#### **5.3.4 Social Interaction Difficulties**

The study discovered that social interaction difficulties had effect on down-syndrome learners' academic performance as they failed to solve any problem rendering them not to be responsible, they could not ask for assistance from others when they did not know making them do the class work wrongly, failed to participate in class activities, they had hearing and auditory problem causing them to have short term memory, had cognitive delay as such they learnt more slowly, failed to learn new words and language as they put in less attempt to learn when they are not in the mood to learn and isolated themselves from others hence making them fail to use appropriate language and they were aggressive which became difficult to teach them. The effect of social interaction difficulties was echoed in one of the responses by a respondent who stated that, "*social interaction difficulties has effect on learners ability to learn language and new words because they put in less to attempt to learn especially when they do not want, this affects their improvement in vocabulary and language*".

The findings of this study are in agreement with the study of Gill (2019) who carried out a research on the importance of early intervention in down-syndrome in Pretoria. The findings of his study revealed that cognitive development and social growth are related. He further said that children experiencing delays in their cognitive development are likely to have difficulty in becoming socially competent and self-regulation of their behaviour and this effects their educational development. Delayed spoken language skills also affect children with down-syndrome the ability to learn and play with other children. But, Gill's study did not specify other difficulties emanating from social interaction difficulties in learners with down-syndrome that had an effect on their academic performance such as communication difficulties which inhibits participation in class,

difficulties in learning new words and language and difficulties in using them correctly and causing learners to be isolated, failing to solve any problem which this study discovered.

The findings of this study are in line with the findings of the theoretical frame work of the International Classification of Functioning Health and Disability Model (2001) which observes that social skills are affected in the learners with down- syndrome and this affects the acquisition of the developmental mile stones such as reading, writing, speaking and cognitive. In a school environment learners with down-syndrome exhibit social interaction difficulties which include abilities to think, problem solving, and communication. Learners with down-syndrome also show specific delays in learning to use spoken language relative to their non-verbal understanding. Additionally, they have difficulties in learning new words, understanding what is said and using words correctly and in ways that others can understand what they are communicating to them. The gap between the learner's understanding and their ability to express themselves is a cause of much frustration and at times leads to behaviour problems and this can have an effect on their academic performance.

On the other hand, the current study highlighted further the effects of social interaction difficulties on learners with down-syndrome academic performance, for example, learners failing to solve any problem rendering them not to be responsible, not asking for assistance from others when they do not know making them do the class work wrongly, failing to participate in class activities, isolating themselves from others hence making them fail to use appropriate language and when they are aggressive it becomes difficult to teach them which was not found in the study by the international classification of functioning health and disability model.

According to these research results, the social interaction difficulties exhibited by learners with the condition of down-syndrome could have had effect on their academic performance.

#### **5.4 Examining Measures that could be Taken in Addressing the Effect of the Condition of Learners with Down- syndrome on their Academic Performance**

The discussion will be based on the suggested measures that could be taken to address the effect of the condition of down-syndrome on their academic performance. The suggested measures will be discussed under the subthemes which include heart problem, low vision and hearing difficulties, poor muscle tone and social interaction difficulties.

##### **5.4.1 Heart Problem**

The study established that the effect of the heart problem could be addressed by advising Parents to take their children to the hospital and seek medical attention so that their health could improve for them to start attending lessons regularly, teachers to visit learners who are sick in hospital and

take work for them to write when they have some strength so that they do not miss much, teachers should use activities such as games, songs, role plays, pictures and concrete objects to stimulate their interest to learn, give them less work which they can manage within their short attention span, teachers should use repetition drills to cement on the concepts being taught, give them different work easier from the others to lessen the stress and give them a lot of remedial work for them to understand. For instance, this is reflected by one respondent who reported that, *“Learners who are in pain due to heart problem should be advised to seek medical attention so that when their health improves they can start attending lessons regularly”*.

The findings of the study are coherent with the findings of Pascall et al (2015) who conducted a study in Morocco on Cardiac Disorders in People with Down’s syndrome and the study found that heart problem in learners with down-syndrome can only be addressed by timely treatment of cardiac anomalies and to apply appropriate preventative measures. However, the study conducted by Pascall et al did not mention other measures for learners with down-syndrome to benefit from education and improve their academic performance, for instance, teachers to visit learners who are sick in hospital and take work for them to write when they have some strength so that they do not miss much, teachers to use activities such as games, songs, role plays, pictures and concrete objects to stimulate their interest to learn, give them less work which they can manage within their short attention span, teachers to use repetition drills to cement on the concepts being taught, give them different work easier from the others to lessen the stress and give them a lot of remedial work for them to catch up on what was missed which this study discovered.

The findings of this study are consistent with the findings of the theoretical framework of International Classification of Functioning, Disability and Health Model (2001) which states running activities may require an individual cardiovascular and respiratory system which are often impaired in a learner with down- syndrome. The study revealed that teachers can advise parents to seek medical interventions such as surgical operations to improve the health of the child, hence absenteeism on the part of the child due to sickness is reduced. The child will in turn concentrate on what the teacher is teaching and the understanding of what is being taught will be increased. Nonetheless, the International Classification of Functioning, Disability and Health Model (2001) did not mention the other measures which are by teachers visiting learners who are sick in hospital and take work for them to write when they have some strength so that they do not miss much which this study has revealed.

In accordance with the measures shown on parents seeking medical interventions such as surgical operations and reduce on absenteeism and when their health is improved, learners start concentrating on what the teacher is teaching and the understanding and giving them a lot of

remedial, it was agreed that if learners with down-syndrome having heart problem were to be handled in this manner, then their academic performance might improve.

#### **5.4.2 Low Vision and Hearing Difficulties**

The study discovered that the effect of low vision and hearing difficulties could be addressed by using large prints, low vision devices such as magnifiers and telescopes for reading, teachers should also position learners where they see better in the shade or in bright light, give time to learners to rest and give them extra time to do the work, parents should be advised to take their children to the hospital so that lenses and hearing aids can be prescribed in order to help them see and hear clearly, appropriate writing tools should be used, use proper contrast when teaching shapes and colours such as light shapes and light colours against dark background, activities such as discrimination of different colours and shapes, matching colours and shapes and sorting colours and shapes can be used in order help learners acquire the knowledge of colours and shapes, give instructions or explanations written on handouts or on the board for them to follow while the teacher is making explanation, make use of facial expression, body language, finger spellings or sign language as well as use of concrete, practical and pictorial methods, face the learners when teaching and close the classroom door to prevent the interference of noise from outside. For example one teacher respondent said that *“the teacher should advise the parents to take their children to the hospital so that they can be provide with hearing devices and lenses which can help to hear and see clearly”*.

The findings of this study were consistent the research conducted by Down-syndrome International (2018) on Down-syndrome and Education. Their study recommended that children with down-syndrome having auditory and visual impairments will benefit when the teachers recognise their specific learning profiles which will address their visual and auditory impairments such as use of sign, gestures, braille and visual support. The study further found that teachers should also teach using pictorial, concrete and practical materials. But the study by the Down-syndrome International did not consider other measures such as using large prints, low vision devices such as magnifiers and telescopes for reading, teachers to position learners where they see better in the shade or in bright light, give time to learners to rest and give them extra time to do the work, parents to be advised to take their children to the hospital so that lenses and hearing aids can be prescribed in order to help them see and hear clearly, appropriate writing tools should be used, use proper contrast when teaching shapes and colours such as light shapes and light colours against dark background, activities such as discrimination of different colours and shapes, matching colours and shapes and sorting colours and shapes can be used in order help learners acquire the knowledge of colours and shapes, give instructions or explanations written on

handouts or on the board for them to follow while the teacher is making explanation and close the classroom door to prevent the interference of noise from outside which the current study revealed.

The findings of this study were consistent with the theoretical framework of the International Classification of Functioning Health and Disability Model (2001) which suggested that the teacher can advise parents to seek medical interventions from the ophthalmologist for low vision and audiologist for hearing difficulties to use amplification devices and lens. In addition, the teacher should avoid teaching in environments with competing background noise to help learners concentrate. The teacher can employ multisensory methods of teaching in order to help learners with down- syndrome improve their processing difficulties and the auditory short-term memory deficits that effect their ability to remember what they hear. The teacher can use symbolic movements, such as sign language, brail, gesture or finger spelling, and by visual methods, such as pictures, tactile pictures, symbols, words, and sentences will help the children to remember information. Teachers should not stand in front of the window or the source of light when teaching or speaking to the learner. Rest periods may be needed when doing close work and variation of near and distant tasks can prevent tiring. The teacher should move learners closer to see the chalk board and classroom demonstrations clearly.

The use of different learning materials such as sensory modalities which implies the use of different senses while teaching for instance, the use of sight, touch, hearing, smell and taste, visual aids, animal sounds and tactile objects such as utensils can enable pupils with down-syndrome to generally respond well and enhance their academic performance. Even though the model of the International Classification of Functioning Health and Disability did not specifically mention measures such as use of appropriate writing tools, use of proper contrast when teaching shapes and colours such as light shapes and light colours against dark background, activities such as discrimination of different colours and shapes, matching colours and shapes and sorting colours and shapes can be used in order help learners acquire the knowledge of colours and shapes and give instructions or explanations written on handouts or on the board for them to follow while the teacher is making explanation which this study discovered

This implies that if learners seek medical attention and the learning methods were modified in such a way that teachers applied these measures and involve the use of more senses, the academic performance of learners with down-syndrome having low vision and hearing difficulties may improve.

### 5.4.3 Poor Muscle Tone

The study revealed that the effect of poor muscle tone could be addressed by the teacher providing support chairs with cushions which could help learners not to get tired quickly, teacher should remind the learners to sit upright, parents should be advised to seek physiotherapy treatment for their children to help them improve their muscle strength, the teacher should do finger exercises with the learners, learners must also be given less work and allow them to rest to help them perform well in writing activities, teacher should engage learners in out-door physical activities, teachers to give positive reinforcement to learners as a way to motivate them and learners should be given additional time to allow them finish writing. For example, one respondent contributed that, *“the teacher should provide support chair chairs to help learners not to get tired quickly and be able to complete school tasks”*.

The findings of this study are coordinated with the findings of Aly and Abonour (2017) who carried out a research in Cairo in Egypt on the Effect of core stability exercise on postural stability in children with down-syndrome. According to their findings on improving postural and voluntary components of motor control in learners with down-syndrome activities such as core stability exercises and conventional physical therapy programme should be considered as an important part of rehabilitation programme for the children with down-syndrome. Nonetheless, the study by Aly and Abonour did not mention how the effect of poor muscle tone on the learners with down-syndrome’s academic performance could be addressed by applying measures such as the teacher providing support chairs with cushions which could help learners not to get tired quickly, teacher should remind the learners to sit upright, learners to be given less work and allow them to rest to help them perform well in writing activities, teachers to give positive reinforcement to learners as a way to motivate them and learners to be given additional time to allow them finish writing which this current study discovered.

The findings of this study are consistent with the findings of the theoretical framework of International Classification of Functioning, Disability and Health model (2001) which states that that children with down -syndrome have orthopedic condition in which performance of motor skills are often affected. According to their findings learners with poor muscle tone can be helped by a teacher advising parents to consult pediatric therapists for medical intervention such as motor therapy. By so doing, learners with poor muscle tone may receive direct occupational or physical therapy services as this could help to create and sustain a muscle contraction essential for motor skills, coordination skills, and balance skills to develop. In the classroom, the learner with poor muscle tone having trouble maintaining an upright posture during learning, the teacher can provide a supportive chair or seat cushion to help maintain proper posture. For school activities

that require a large amount of physical work such as written assignments, teachers may need to modify the requirements such, try breaking down large assignments into smaller parts, allow frequent breaks to allow the child to rest and provide extra time to complete assignments. This will enable the learner not to easily tire, hence he or she will be able to grasp the concepts being taught and be able to complete the given tasks this will improve learner's performance.

In view of this research result, the findings are in agreement with what was discovered in the study concerning the suggested measures that could be taken to address the effect of the condition of learners with down-syndrome having poor muscle tone. If learners with were to be handled in that way, then their academic performance may improve.

#### **5.4.4 Social Interaction Difficulties**

The study found that in order to address the effect of social interaction difficulties on learners with the condition of down-syndrome, teachers should engage learners in a lot of activities which require problem solving and see if they could do the right thing, teachers should also use repetition drills, group work, and role plays and songs involving the language and the words as this would help them not to forget, teach using different mediums like television, radio, picture word matching, flash cards to help learn a lot of language and words, teach learners phonics, sounds or vowel sound as it will help them have good pronunciation, teach the learners one word at a time to assist them master words properly to avoid confusing words, and by teaching the learner the words which fit to particular situations and reading to support spoken language and parents to seek medical attention from the speech therapists. This is reflected in the responses of one of the respondents who suggested that, *“the teacher should frequently engage learners in a lot of activities which require problem solving and see if they can do a right thing”*.

The findings of this study are in agreement the study by Gill (2019) who carried out a research on the importance of early intervention in down-syndrome in Pretoria. The findings by Gill revealed that cognitive development and social growth are related. Gill recommended that in order to improve cognitive development and social growth in learners with down-syndrome, they should be taught special skills to help them cope with the disability. The skills should also help the child overcome some of the limitations imposed on learning and the normal everyday activities experienced by able-bodied children. Gill further found that children with down-syndrome should be helped acquire adaptive skills leading to greater independence and competence so that he or she function within the main stream and achieve a sense of self-mastery and develop a positive self-image. Nevertheless, the study by Gill did not specify the special skills to teach the learners with down-syndrome to help them cope with the disability and improve their academic

performance such as problem solving, pronunciation and communication skills. The current study has also highlighted on measures like teachers to use repetition drills, tongue twisters, games, group work, and role plays and songs involving the language and the words as this would help them not to forget, teach using different mediums like television, radio, picture word matching, flash cards to help learn a lot of language and words and teach the learners one word at a time to assist them master words properly to avoid confusing words which are not found in the study conducted by Gill.

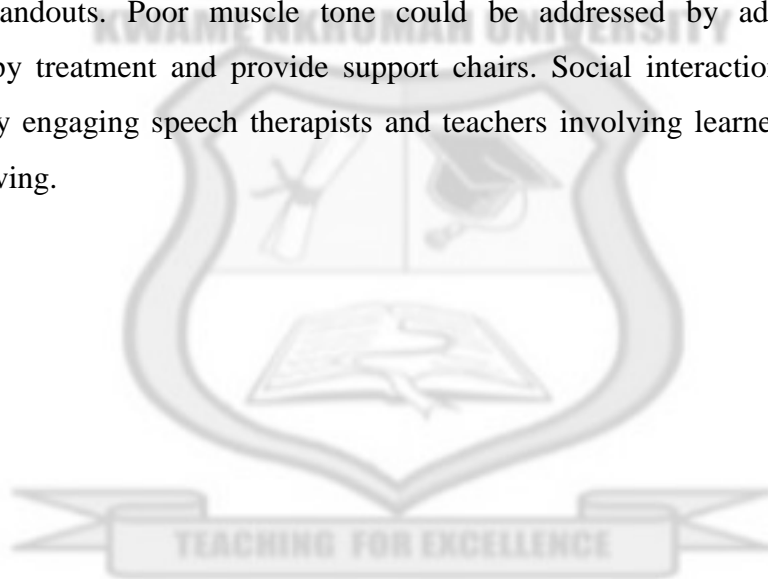
The findings of this study are in line with the findings of the theoretical frame work of the International Classification of Functioning Health and Disability Model (2001) which observes that parents can be advised to seek medical intervention from the speech language therapist. Speech language therapy can help learners with down- syndrome improve their communication skills, conversation skills, pronunciation skills, understanding what to read, and learning and remembering words and this would help them to learn. Teachers can also help by improving the learner's play skills, social skills and language or speech; creating play and learning situations which are more suited to the learner's abilities such as role play, conversation, reading aloud and question and answer in which the learner with down- syndrome can participate more as an equal or in which he or she can even excel. Although the model by international classification of functioning health and disability did not mention other measures such as teachers to strengthen the learner's language and speech abilities by encouraging the child to use words he or she already knows and by teaching the learner the words which fit to particular situations and reading to support spoken language, thereby making use of the relative visual strength of children with down-syndrome.

For this reason, this indicates that, if these learners with down-syndrome were to be taught while applying these measures discovered and discussed in this study, they could be able to perform well academically and make remarkable progress.

## **5.5 Summary**

This chapter discussed the findings of the study concerning the effect of the conditions of learners with down-syndrome on their academic performance in the special units in a Zambian School and Hospital. The study found that the learners with down-syndrome had conditions which had effect on their academic performance and these were heart problem, low vision and hearing difficulties, poor muscle tone and social interaction difficulties. The identified conditions were that some learners had heart problem, some were having medical report of heart problem, some had under gone heart surgery and others had died. Learners with low vision could not see things clearly

whereas those with hearing difficulties were not hearing properly. Those with poor muscle tone were getting tired easily and failed to sit erect and those with social interaction difficulties were aggressive and isolated themselves making it difficult to teach them. The study also established the effect of the conditions of down-syndrome on learners' academic performance. Learners with heart problem lacked concentration, understanding what was being taught resulting in them not participating in class lessons and missed classes due to hospitalisation. The effect of low vision and hearing difficulties were reading difficulties, writing difficulties and could not follow oral instructions and explanations. Poor muscle tone had effect on learners' posture, fine and gross motor tasks. Social interaction difficulties had effect on learners' ability to solve problems, communicate and learn words and language easily. Under the measures to address the effect were that parents should be advised to seek medical attention so that their health could improve for them to attend lessons regularly. The effect of low vision and hearing difficulties could be addressed by learners using low vision devices, hearing aids, lenses, teachers to use large prints and give handouts. Poor muscle tone could be addressed by advising parents seeking physiotherapy treatment and provide support chairs. Social interaction difficulties should be addressed by engaging speech therapists and teachers involving learners in oral activities and problem solving.



## **CHAPTER SIX**

### **CONCLUSION AND RECOMMENDATIONS**

#### **6.1 Overview**

This chapter presents the conclusion and the recommendations emanating from the findings and the discussions of the study. It also suggests the areas for further research on the effect of the condition of learners with down-syndrome on their academic performance. The conclusions and recommendations will be in accordance with the study findings and objectives.

#### **6.2 Conclusion**

It was apparent from the findings of this study that learners with down-syndrome have conditions which have effect on their academic performance. The study discovered that learners with down-syndrome had conditions which are heart problems, low vision and hearing difficulties, poor muscle tone and social interaction difficulties. Some learners with Heart problem had undergone surgery others had medical reports and others had died of heart problem and those with low vision and hearing difficulties were not seeing clearly and hearing properly. Learners with poor muscle tone had poor posture and those with social interaction difficulties isolated themselves. The study also discovered the effect of the conditions of down-syndrome on learners' academic performance which included; those with heart problems, lacked concentration when they were given activities causing them not to do class activities correctly, not participate in class lessons making them lag behind in their academic work, not attending lessons regularly making them miss what their friends had learnt hence fail to catch with their peers in terms of their academic work, not understanding what was being taught by the teacher resulting in them failing the tests making them fail to progress academically. Those with the condition of low vision could not see things clearly, had reading difficulties, writing difficulties, lacked reading comprehension skills, failed to recognise shapes and colours while those with hearing difficulties failed to hear properly and follow the oral instructions and understand explanations given by the teacher. The condition of poor muscle tone had effect on down-syndrome learners' posture, which made their bodies fatigue quickly and fail to sit erect, lacked concentration making them fail to participate fully during the lesson as well as failing to carry out fine and gross motor tasks making them fail to write properly any given class exercise and participate in physical activities, making them to lag behind in class work as compared to their peers. Social interaction difficulties had effect on down-syndrome learners' ability to solve out a problem resulting in them not being responsible, failing to ask when they do not know and that affects them academically as compared to their peers and learners failing to learn the spoken language and new words easily which affected them in oral activities. The study also revealed the measures that could be taken in addressing the effect of the condition of learners with down- syndrome on their academic performance. Learners with heart problem

should be given less work to help them focus on the work within their short attention span, should be given resting time in order to refresh their minds and should be given remedial work to help them catch up with their peers, parents to be advised to seek medical attention for their children so that when their health improves they can start attending lessons regularly. Also, learners with low vision and hearing difficulties could be helped by the teachers using large prints when reading to enable learners with low vision see the letters and word clearly, the teacher to give extra time as low vision often need more time to do activities than those with normal vision. For hearing difficulties the teacher should advise the parents to take their children to the hospital so that they can be provided with hearing devices and lenses which can help them to hear and see clearly. Learners with poor muscle tone could be helped by advising the parents to seek physiotherapy treatment for their children to improve their muscle strength, provide support chairs, let learners lie on their stomach while doing an activity on the floor, give learners breaks and less work. To improve the effect of social interaction difficulties on down-syndrome learners' academic performance, teachers should do the following; frequently engage learners in a lot of activities which require problem solving and oral activities, teach the learners one word at a time, learners to be encouraged to watch television and listen to the radio as it will help learn a lot of language and advise parents to seek assistance from the speech therapist. Due to lack of these measures, made the conditions of down-syndrome to have effect on down-syndrome, learners' academic performance which are established in this study.

### **6.3 Recommendations**

In view of the findings and conclusions the following are the recommendations.

#### **6.3.1 Recommendations for the Parents**

1. Parents should take their children for screening for them to know if they have conditions of Down-syndrome.
2. Parents should teach their children with down- syndrome how to behave and interact with others in a socially acceptable way.

#### **6.3.2 Recommendations for the Teachers**

3. Teachers should ensure that all learners with down-syndrome regardless of their condition are given equal attention.
4. Teachers to keep record of proceeding for all learners of down-syndrome.
5. Teachers should provide extra time and rest periods to learners with the condition of down-syndrome for every learning activity.
6. Teachers of special education handling learners with down-syndrome should work hard and endeavor to work with the stake holders from the Ministry of General Education and Ministry

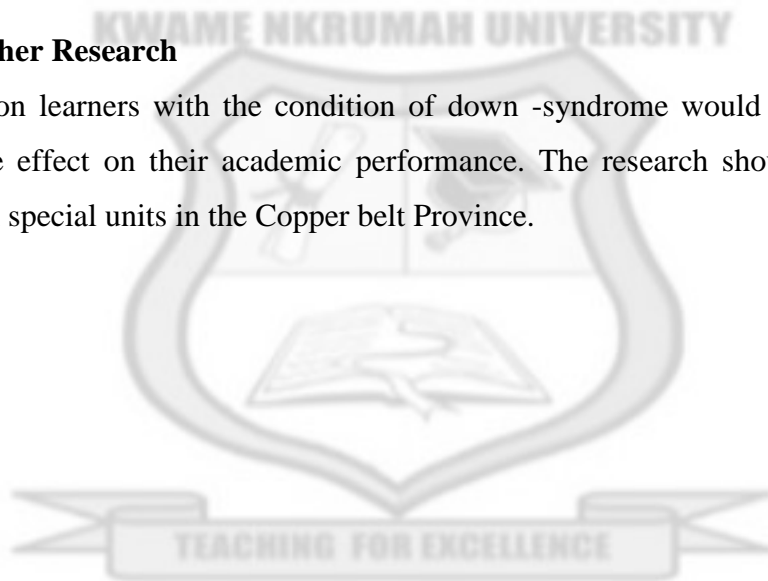
of Health and see to it that special units are established at every general hospital of every district in the Copper belt Province as it is at Kitwe Teaching Hospital Special Unit.

### 6.3.3 Recommendations for the School

7. The schools should ensure that all necessary materials and financial support are given to learners with down-syndrome.
8. The school should recommend teachers handling learners with down-syndrome for training in special education so that they acquire more knowledge on how best they can handle learners with down-syndrome who have diverse needs.
9. The school should enhance School Based Continuous Professional Development Programmes for teacher handling learners with down-syndrome.
10. The school should provide correction devices such as magnifying lenses and telescopes to learners with low vision, suitable rooms for learners with hearing difficulties like acoustic rooms and supportive chairs or chairs with cushions for learners with poor muscle tone

### 6.3.3 Further Research

A research on learners with the condition of down -syndrome would be valuable in order to establish the effect on their academic performance. The research should be conducted in all schools with special units in the Copper belt Province.



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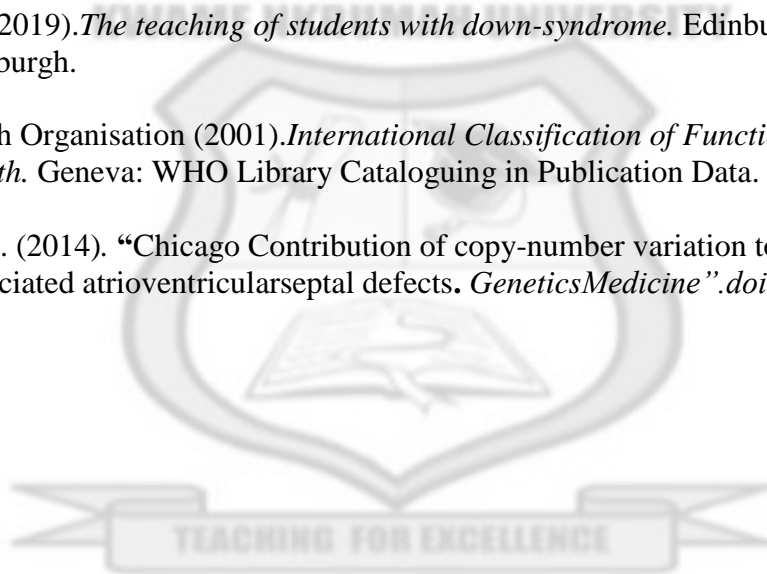
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## APPENDICES

### Appendix 1

#### KWAME NKRUMAH UNIVERSITY



**School of Education Department of Special Education**

**Semi Structured interview Guide for Education Standard Officer (ESO-Special)  
Headteachers and Guidance Teachers**

Conditions of down-syndrome semi structured interview for phenomenological study

**Subject:** To explore learners with the condition of down-syndrome and its effect on their academic performance at one school and hospital unit in Kitwe

Dear Respondent,

This semi structured guide is designed to collect information from head teachers and teachers' on learners with the condition of down-syndrome and its effect on their academic performance. You have been purposely selected to answer the questions in this interview. The research being conducted is strictly for academic purpose and as such, its findings or information provided will be treated with utmost confidentiality. May you please answer as truthfully and sincerely as possible. This is an anonymous phenomenological study of my thesis of a research module that I am doing this year.

Researcher

## **1. The condition of down-syndrome which have effect on learners' academic performance**

### **a. Heart problem**

- Do any of these learners of down-syndrome have Heart problem?

### **b. Low vision and hearing difficulties**

- Do any of these learners of down-syndrome have Low vision?
- Do any of these learners of down-syndrome have hearing difficulties?

### **c. Poor muscle tone**

- Do any of these learners of down-syndrome have Poor muscle tone?

### **d. Social Interaction**

- Do any of these learners of down-syndrome have social interaction difficulties?

## **2. Assessing the effect of the condition of down-syndrome on learners' academic performance**

### **a. Heart problem**

#### **i. What effect has heart problem have on learners' academic performance in terms of:**

- Concentration when they are given activities?
- Always being present for lessons?
- Showing understanding of what is being taught by the teacher?

### **b. Low vision and Hearing difficulties**

#### **i. What effect has low vision and hearing difficulties has on Learner's:**

- Reading?
- Writing?
- Ability to distinguish and recognizing shapes colours?
- Ability to follow the oral instructions and understand explanations given by the teacher

### **c. Poor muscle tone**

#### **i. What effect has poor muscle tone on**

- Learner's posture?
- Learners' ability to carry out fine and gross motor tasks?
- Learner's ability to complete school tasks given to them?

### **d. Social Interaction**

- Are the learners able to solve out a problem?
- Are they able to learn the spoken language easily?
- Do they have difficulties in learning new word?

### **3 Exploring the measures that can be taken in addressing the condition of learners with down-syndrome on their academic performance.**

#### **a. Heart problem**

- According to your experience, what can be done to help the learners when they are not concentrating?
- What can be done to reduce absenteeism?
- What can be done to improve understanding?

#### **b. Low vision and Hearing difficulties**

- What can be done to improve reading problems in learners?
- What can be done to improve writing difficulties?
- What can be done to help learners be able to distinguish colour?
- What can be done to help learners acquire knowledge?
- What can be done to help learners follow all the instructions without leaving out some?

#### **c. Poor muscle tone**

- How can we help learners not to tire quickly?
- What can we do to help the learners have a good posture when working on the table?
- What can be done for learners to carry out fine and gross motor tasks effectively?
- What can be done to help learners complete school tasks when given to them?

#### **d. Social Interaction**

- What can be done to help learners with their problem solving?
- How can we help learners communicate effectively?
- How can we help learners learn the spoken language?
- How can we help learners learn new words without difficulties?

***Thank you for your positive participation***

KWAME NKRUMAH UNIVERSITY



**School of Education Department of Special Education Observation Checklist for teachers and learners with down-syndrome**

Conditions of down-syndrome semi structured interview for phenomenological study

**Subject:** To explore learners with the condition of down-syndrome and its effect on their academic performance at one school and hospital unit in Kitwe *The researcher will tick appropriately on a space provided*

S/N	Them/Item	Yes	No	comment
<b>1</b>	<b>The condition of down-syndrome which have effect on learners’ academic performance</b>			
1.1	Heart problem			
a	Learners with down-syndrome had Heart problem			
1.2	Low vision and hearing difficulties			
a	Learners with down-syndrome had low vision			
b	Learners with down-syndrome had hearing difficulties			
1.3	Poor muscle tone			
a	Learners with down-syndrome had poor muscle tone			
1.4	Social interaction			
a	Learners interacted with others			
b	learners faced problems as they interacted			
<b>2</b>	<b>How the condition of down-syndrome affects learners’ academic performance</b>			
2.1	Heart problem			
a	learners concentrated during given activities			
b	Learners were always present for lessons			

c	Learners showed understanding of what was being taught by the teacher			
2.2	Low vision and hearing difficulties			
a	Learners had difficulties in reading			
b	Learners had difficulties in writing			
c	Learners were able to distinguish colours			
d	learners were able to recognise shapes			
e	Learners were able to acquire the knowledge which the teacher wanted them to know.			
f	Teacher broke down instructions for learners in smaller units			
2.3	Poor muscle tone			
a	Learners got tired quickly			
b	Learners were able to sit erect while working on the Table			
c	Learners had a problem in carrying out fine and gross motor tasks			
d	Learners completed school tasks given to them			
2.4	Social Interaction			
a	Learners were able to solve out a problem			
b	Learners were able to learn the spoken language easily			
c	Learners had difficulties in learning new words			
<b>3</b>	<b>Measures that can be taken in addressing the effect of the condition of learners with down- syndrome on their academic performance</b>			
3.1	Heart problem			
a	The teacher gave remedial work to learners with heart problem.			
b	The teacher gave learners more time to do the work			
3.2	Low vision and hearing difficulties			
a	The teacher moved learners closer to see the chalk board and classroom demonstrations.			
b	Teachers did not stand in front of the window or the source of light when teaching.			
c	The teacher did not teach in environments with competing background noise.			
d	The teacher used the brail			
e	The teacher used symbolic movements such as			
	Finger spelling			

	gesture			
	Symbols			
f	Teacher used large print			
g	The teacher involved learners in activities such as role play and drama to help them acquire knowledge			
h	The teacher broke down instructions into smaller units for learners to understand			
i	The teacher used clues and prompts			
j	The teacher used visual methods, such as			
	Pictures			
	Tactile pictures			
	Symbols			
3.3	Poor muscle tone			
a	The learners with poor muscle tone having trouble maintaining an upright posture during learning, the teacher provided a supportive chair or seat cushion to help maintain proper posture.			
b	For school activities that require a large amount of physical work such as written assignments, the teacher modified the requirements by breaking down large assignments into smaller parts			
c	The teacher allowed frequent breaks to allow learners to rest.			
d	The teacher provided extra time to allow learners complete assignments			
3.4	Social Interaction			
a	The teacher helped learners to improve:			
	play skills			
	social skills			
	language or speech			
b	The teacher created situations such as			
	role play			
	Conversation			
	reading aloud			
	question and answer			
c	The teacher strengthened the learner's language and speech abilities by encouraging the child to use words he or			
	she already knows and by systematically teaching the learner the words which fit to particular situations using signing and reading			

## Appendix 3

### KWAME NKRUMAH UNIVERSITY



#### **School of Education Department of Special Education**

#### **Focus group discussion for Special Education teachers and non-Special Education teachers**

Conditions of down-syndrome focus group discussion for phenomenological study

**Subject:** To explore learners with the condition of down-syndrome and its effect on their academic performance at one school and hospital unit in Kitwe

Dear Respondent,

This focus group discussion is designed to collect information from Special Education teachers and non-Special Education teachers on learners with the condition of down-syndrome and its effect on their academic performance.

You have been purposely selected to answer the questions in this interview. The research being conducted is strictly for academic purpose and as such, its findings or information provided will be treated with utmost confidentiality. May you please answer as truthfully and sincerely as possible. This is an anonymous phenomenological study of my thesis of a research module that I am doing this year.

Researcher

## **1 The condition of down-syndrome which have effect on learners' academic performance.**

### a. Heart problem

- Do any of these learners of down-syndrome have Heart problem?

### b. Low vision and hearing difficulties

- Do any of these learners of down-syndrome have Low vision?
- Do any of these learners of down-syndrome have hearing difficulties?

### c. Poor muscle tone

- Do any of these learners of down-syndrome have Poor muscle tone?

### d. Social Interaction

- Do any of these learners of down-syndrome have social interaction difficulties?

## **2 How the condition of down-syndrome affects learners' academic performance**

### a. Heart problem

- Do learners concentrate when they are given activities?
- Are learners always present for lessons
- Do learners show understanding of what is being taught by the teacher?

### b. Low vision and hearing difficulties

- Do learners with low vision have difficulties in reading?
- Do they have difficulties in writing?
- Are learners able to distinguish colours?
- Are they able to recognise shapes?
- Are the learners able to acquire the knowledge which the teacher wants them to know?

### c. Poor muscle tone

- Do learners get tired quickly?
- Are learners able to sit erect while working on the table?
- Do the learners have problem in carrying out fine and gross motor tasks?
- Do learners complete school tasks given to them?

### d. Social Interaction

- Are the learners able to solve out a problem?
- Are they able to learn the spoken language easily?
- Do they have difficulties in learning new word?

## **3. Examining Measures that can be taken in addressing the effect of the condition of learners with down- syndrome on their academic performance.**

### a. Heart problem

- According to your experience, what can be done to help the learners when they are not concentrating?
  - What can be done to reduce absenteeism?
  - What can be done to improve understanding?
- b. Low vision and Hearing difficulties
- What can be done to improve reading problems in learners?
  - What can be done to improve writing difficulties?
  - What can be done to help learners be able to distinguish colour?
  - What can be done to help learners acquire knowledge?
  - What can be done to help learners follow all the instructions without leaving out some?
  - What can be done to help improve their memory?
- c. Poor muscle tone
- How can we help learners not to tire quickly?
  - What can we do to help the learners have a good posture when working on the table?
  - What can be done for learners to carry out fine and gross motor tasks effectively?
  - What can be done to help learners complete school tasks when given to them?
- d. Social Interaction
- What can be done to help learners with their problem solving?
  - How can we help learners communicate effectively?
  - How can we help learners learn the spoken language?
  - How can we help learners learn new words without difficulties?

***Thank you for your positive participation***

## Appendix 4



### Research Ethics Consent Form

**Name of Participant:** \_\_\_\_\_

**Title of Research:** To explore learners with the condition of down-syndrome and its effect on their academic performance at one school and hospital unit in Kitwe

Contact Details of Main Researcher: 0977360973

Members of research team (if applicable): NIL

1. I agree to take part in the above research. I have read the Participant Information Sheet which is attached to this form. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
2. I understand that I am free to withdraw from the research at any time, for any reason and without prejudice.
3. I have been informed that the confidentiality of the information I provide will be safeguarded.
4. I am free to ask any questions at any time before and during the study.
5. I have been provided with a copy of this form and the Participant Information Sheet.

**Data Protection:** I agree to the University processing personal data which I have supplied. I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.

Name of participant (print).....

Signed..... Date.....

If you wish to withdraw from the research, please complete the form below and return to the main investigator named above.

Title of Project: \_\_\_\_\_

### I WISH TO WITHDRAW FROM THIS STUDY

Name: ..... Signed ..... Date:.....

## Appendix 5: Introductory Letter



KWAME NKURUMAH UNIVERSITY

DIRECTORATE OF RESEARCH AND POSTGRADUATE STUDIES

P.O.BOX 80404, KABWE, ZAMBIA

Website: [www.nkrumah.edu.zm](http://www.nkrumah.edu.zm)

PHONE:0977897325/0967507131

TEL/FAX: 021 5-223223.

March 10, 2020

### TO WHOM IT MAY CONCERN

#### **Introduction Letter: Chidongo Phenny (Student No. 120180007)**

This serves to introduce the above named as bona fide student of Kwame Nkrumah University in Kabwe. She is a Postgraduate Student in the School of Education and pursuing **Master's Degree in Special Education**. Ms.Chidongo is working on the topic "**Learners With The Condition Of Down Syndrome And Its Impact On Their Academic Performance**" in her research, which is partial fulfillment of the Master of Education Special Education Degree requirements for graduation. As part of her research, she will need to collect information regarding her subject of interest from **institutions such as yours**, as well as from the general members of the public. She has chosen to visit your institution for this purpose. The data she will gather will strictly and purely be used for academic purposes only, i.e. to enable her write a research paper that will culminate in a Master's dissertation which will be submitted to the University upon completion.

Any favourable assistance rendered to her will be highly appreciated.

Thank you in advance.

Yours sincerely,

Dr. Hachintu Joseph (Phd)

**Director: Research & Postgraduate Studies**

